Regional Differences in the Hospitalization and Care of Patients With Mental Diseases

By

JOSEPH ZUBIN

and

GRACE C. SCHOLZ

United States Public Health Service

Associated with the

Mental Hospital Survey Committee

SUPPLEMENT No. 159

TO THE

PUBLIC HEALTH REPORTS

FEDERAL SECURITY AGENCY

UNITED STATES PUBLIC HEALTH SERVICE

THOMAS PARRAN, *Surgeon General*

DIVISION OF SANITARY REPORTS AND STATISTICS

CHARLES V. AKIN, *Assistant Surgeon General, Chief of Division*

✦

NITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1940

For sale by the Superintendent of Documents, Washington, D. C.

Price 15 cents

CONTENTS

	Page
I. Prevalence and incidence of hospitalized mental diseases	2
1. Hospitalization of patients	2
2. Trend of mental disease	15
II. Movement of patient population	29
3. Discharges	29
4. Deaths	34
5. Removals	38
6. Turn-over and replacement of patients	41
III. Hospital administration and expenditures	44
7. Adequacy of hospital facilities	44
8. Care of mental patients	47
9. Cost of care of the mentally diseased	55
IV. The influence of geographic region on mental disease indexes	61
V. Summary	66
VI. Acknowledgments	75
VII. References	75
VIII. Appendix	76
IX. Index	93

REGIONAL DIFFERENCES IN THE HOSPITALIZATION AND CARE OF PATIENTS WITH MENTAL DISEASES

In a previous paper (*1*) the prevalence and incidence of all types of hospitalized mental diseases and mental handicaps were discussed. This paper deals only with mental diseases. These diseases constitute the major problem in the general field of mental ailments, accounting for nearly 80 percent of all the mentally ill and mentally handicapped patients. In a subsequent paper the problem of mental defect and epilepsy will be treated separately.

Scope of problem.—Patients with mental disease occupy more than 50 percent of all the hospital beds in the United States (*2*) and account for almost one-fifth of the expenditures in all hospitals (*3*). In the country as a whole the State hospitals for mental disease, where the vast majority of mental patients are found, account for 5.6 percent of all the State budgets for the operation and maintenance of general departments (*4*).

Regional differences.—The care of mental disease is by no means constant in quality and extent throughout the Nation. The purpose of this study is to present indexes of the distribution of mental disease and its care throughout the United States. To reduce the problem to manageable and easily comprehensible dimensions, the geographic regions of the country as established by the Bureau of the Census will constitute the unit of description, rather than the individual States.[1]

This study will make use of three types of indexes in the field of mental disease: (1) Indexes of prevalence and of incidence of hospitalized mental disease; (2) indexes of movement of patient population; (3) indexes of hospital administration and costs. These indexes are based on data obtained from reports of the Bureau of the Census, the Journal of the American Medical Association, and several other sources.

---

[1] The regional analysis given here may prove of value as a standard of comparison for the individual States and even the individual hospitals. By following the analysis given in this study the pattern of mental disease indexes for a State can be readily computed and then compared with the pattern of indexes that prevails in the region in which the State is located or with the pattern for the entire country. Figure 10 on page 66 gives a graphic presentation of the index patterns for the regions and the United States.

I. Prevalence and Incidence of Hospitalized Mental Diseases

1. HOSPITALIZATION OF PATIENTS

The total number of patients with mental disease in the United States has never been definitely ascertained. There are fairly reliable figures for the number of patients in hospitals for mental disease, but none for those outside of hospitals. It has been estimated that about 5 percent of the total population will enter a hospital for mental disease for a shorter or a longer period sometime in the course of their lives. At any one given time, however, the number of patients requiring hospitalization is much smaller and has been estimated at about 400 per 100,000 in urban areas and 350 per 100,000 in rural areas.

This study is limited to a consideration of hospitalized mental disease. The number of hospitalized patients is an indication of the present magnitude of the problem, but it gives no indication of the present trend in mental disease. The number of hospitalized patients cumulates over the years as a result of the excess of admissions over discharges, and stable communities in which the trend in mental disease is constant or declining may still show high rates of hospitalized patients. On the other hand, relatively new States that are caring for their mentally ill adequately may have low hospitalization rates because of the recency of their development. In order to gauge the present trend in mental disease, the number of admissions must be considered. Both of these measures will be presented.

Table 1 gives the number of patients, by type of hospital, in the nine geographic regions [2] of the United States. There were 416,784 patients in the hospitals for mental disease of the country at the end of 1935. Of this number 84.8 percent were in State hospitals, 8.3 percent in county and city hospitals, 4.4 percent in Veterans' Administration facilities, and 2.6 percent in private hospitals. These figures do not include the 589 patients in the State psychopathic hospitals. If these were included, they would constitute only 0.1 percent of the total.

State, county, and city hospitals.—The nine geographic regions differ considerably in the proportion of patients found in each type of hospital. The proportion in the State hospitals varies from 77.0 percent in the Middle Atlantic States to 94.4 percent in the West South Central States. There is greater disparity between the regions in the proportion of patients in city and county hospitals. Three regions, the New England, Mountain, and Pacific, have no county and city hospitals, while in the Middle Atlantic States 17.7 percent of the patients are in such hospitals. Combining the State, city, and county hospital patients into one group, they constitute 93.1 percent of all the mental patients in the United States. The proportion of patients in these two types of hospitals combined shows less interregional variation than the proportion for each type separately.

[2] Regional divisions of States are given on page 76.

It is approximately the same for all the regions, varying only a few points from 88.3 percent in the Mountain States to 95.3 percent in the East South Central States.

TABLE 1.—*Patients in hospitals for mental disease in the geographic regions of the United States, by type of control of hospital, 1935*

Region	State hospitals		City and county hospitals		State, city, and county hospitals, percent	Veterans' Administration facilities		Private hospitals		Total number of patients
	Patients	Percent	Patients	Percent		Patients	Percent	Patients	Percent	
New England	34,665	91.1			91.1	1,465	3.9	1,905	5.0	38,035
Middle Atlantic [1]	87,169	77.0	20,039	17.7	94.7	3,965	3.5	2,103	1.9	113,276
East North Central	68,061	80.9	9,539	11.3	92.2	4,490	5.3	2,009	2.4	84,099
West North Central	35,222	84.2	3,614	8.6	92.8	1,605	3.8	1,395	3.3	41,836
South Atlantic [2]	37,729	90.7	280	.7	91.4	2,033	4.9	1,549	3.7	41,591
East South Central	19,491	90.5	1,029	4.8	95.3	787	3.7	229	1.1	21,536
West South Central	27,336	94.4	60	.2	94.6	1,186	4.1	372	1.3	28,954
Mountain	9,519	88.3			88.3	1,039	9.6	224	2.1	10,782
Pacific	28,993	91.9			91.9	1,706	5.4	834	2.6	31,533
United States [3]	353,305	84.8	34,561	8.3	93.1	18,276	4.4	10,642	2.6	416,784

[1] Does not include city and county hospitals recorded in New York State.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935. United States Veterans Remaining Under Hospital Treatment in All Hospitals, by Hospital and Veterans' State of Residence, July 1, 1935, U. S. Veterans' Administration.

Private hospitals.—The proportion of patients in private hospitals varies from 1.1 percent in the East South Central region to 5.0 percent in the New England region. In dealing with the distribution of private patients, it should be noted that the private institutions, in contrast with State institutions, are not limited by law to the admission of State residents only. For this reason patients hospitalized in the private hospitals of a given State may be legal residents of other States. But it is probably reasonable to assume that, because of the large area covered by each region, the net residue of the interregional migration of patients in private hospitals is negligible.

Veterans' Administration facilities.—In the Veterans' Administration facilities a similar situation exists, patients not being limited to hospitalization in their home States. However, on the basis of tables furnished by the Veterans' Administration for patients in facilities by State of origin (reported State of permanent address of the patient at time of admission), it was possible to redistribute the proportion of patients by region. It is interesting to note that the proportion of all mental patients accounted for by the Veterans' Administration facilities is relatively constant from region to region, being between 3.5 and 5.4 percent. Only the Mountain region shows a much higher proportion, 9.6 percent. It is possible that in this region the lack of facilities in State hospitals tends to increase the number of patients seeking admission to Veterans' facilities.

It is customary not to include the patients in psychopathic hospitals because these hospitals serve largely as receiving centers and clearing

houses. The patients who are seriously ill are transferred from the psychopathic hospital to State hospitals as soon as the observation period is over. If the patients in the State psychopathic hospitals were included in the grand total, they would constitute 0.2 percent in the New England, Middle Atlantic, East North Central, and West South Central regions, 0.1 percent in the West North Central region, and 0.8 percent in the Mountain region. Three regions have no separate psychopathic hospitals, the Pacific, East South Central, and South Atlantic.

Hospitalization rates.—The total number of patients in a region must be related to the general population before the prevalence of hospitalized patients in the several regions may be compared. Table 2 shows the number of mental patients hospitalized and the hospitalization rate per 100,000 of the total population.[3]

There are vast differences in hospitalization rates between regions. For the country as a whole, 328 individuals in every 100,000 of the general population resided in mental hospitals during 1935. In New England the hospitalization rate was 449 per 100,000, while in the East South Central region (Kentucky, Tennessee, Alabama, and Mississippi) the hospitalization rate was only 206 per 100,000, or less than half the New England rate. This does not necessarily indicate that there is less mental disease in the East South Central region. It may reflect the lack of facilities for the care of mental disease, necessitating the retention of seriously ill patients at home, in jails, almshouses, and other types of unsuitable institutions. It is to be expected that the hospitalization rate in a primarily rural section like the East South Central region will be lower than in the highly urbanized New England region. But the concensus of opinion indicates that, even in rural areas, the hospitalization rate should not fall much below 350 per 100,000 of the general population.

TABLE 2.—*Patients in hospitals for mental disease and rate per 100,000 of the total population, by region, 1935*

Region	Patients in all hospitals [1]	Rate per 100,000 of total population	Region	Patients in all hospitals [1]	Rate per 100,000 of total population
New England	38,035	449.4	East South Central	21,536	205.7
Middle Atlantic	113,276	416.7	West South Central	28,954	228.5
East North Central	84,099	329.2	Mountain	10,782	288.1
West North Central	41,836	305.9	Pacific	31,533	366.4
South Atlantic [2]	41,591	256.5	United States [3]	416,784	327.8

[1] Excluding patients in State psychopathic hospitals throughout the United States and in city and county hospitals recorded in New York State.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

[3] The rates are for male and female patients combined. In some diseases there is a considerable differential between male and female rates. However, since the regional variation in the sex ratio of the general population is rather small, it is likely that interregional comparisons between the rates are still valid.

To some extent the crude interregional differences are more apparent than real. Mental disease rarely brings about hospitalization of children below 15 years of age and the proportion of the population below that age is not constant from region to region.

The proportion of the population 15 years old and over is 70.6 percent for the country as a whole, but it varies from 65.4 in the East South Central region to 76.6 in the Pacific region.[4] Since the East South Central region consists of a population in which one-third are children below 15 and only two-thirds are liable to hospitalization, it is to be expected that a lower hospitalization rate per 100,000 of the total population will obtain in this region than in the Pacific region where more than three-fourths of the population is liable to hospitalization. In order to obtain more comparable hospitalization rates, the rate of hospitalization per 100,000 of the general population 15 years old and over was used. (See appendix, table A.)

The expected rates based on a total population requiring hospitalization of 400 per 100,000 for urban areas and 350 per 100,000 for rural areas may be translated into the new rates based on the population liable to hospitalization for mental disease. For the United States the proportion of the population 15 years old and over is 70.6 percent. In urban areas it is 74.2 percent and in rural areas 66.1 percent. Utilizing these proportions, the new expected hospitalization rates are 539.3 for urban regions and 530.9 for rural regions. The data for geographic regions are shown in table 3.

TABLE 3.—*Hospitalization rate for patients in hospitals for mental disease per 100,000 of total population as compared with rate per 100,000 of the population aged 15 and over, by region, 1935*

Region	Rate based on total population		Rate based on population aged 15 and over		Percent that actual rate forms of expected rate—	
	Actual	Expected [1]	Actual	Expected [1]	When based on total population	When based on population aged 15 and over
New England	449.4	388.7	616.5	537.1	116.6	114.8
Middle Atlantic [2]	416.7	388.9	571.6	537.2	107.1	105.4
East North Central	329.2	383.2	453.2	536.3	85.9	84.6
West North Central	305.9	370.9	429.6	534.2	82.5	80.4
South Atlantic [3]	256.5	367.2	391.6	507.2	69.9	77.2
East South Central	205.7	364.1	314.5	578.4	56.5	54.4
West South Central	228.5	368.2	341.6	533.8	62.1	64.0
Mountain	288.1	369.7	421.8	534.0	77.9	79.0
Pacific	366.4	383.8	478.3	536.4	95.5	89.2
United States [4]	327.8	378.1	464.3	535.3	86.7	86.7

[1] Expected rate is based on the percent urban and rural in each region.
[2] Does not include city and county hospitals recorded in New York State.
[3] Excluding the District of Columbia.
[4] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

[4] Figures based on the 1930 census.

It is interesting to compare the degree to which the regions approximated the generally expected rate based on the total population and the new expected rate based on the population 15 years old and over. For the country as a whole, the application of the new standard makes no difference since the two figures are proportional, but some alterations occur in the regions.

The most striking change occurs in the rate for the South Atlantic region. Because of its large proportion of children, the rate based on the total population is an underestimate of the true rate. It is only 69.9 percent of the expected rate. However, when the age correction is applied, the rate rises to 77.2 percent of the expected. On the other hand, in the Pacific region where the proportion of children is rather low, the rate based on the total population is an overestimate of the true rate. It is fully 95.5 percent of the expected rate. However, when the age correction is applied, the rate drops to only 89.2 percent of the expected. In the other regions the rates do not show appreciable changes when the age correction is applied, slight increases being recorded in the West South Central and the Mountain regions and slight decreases in the other regions.

Patients on parole.—In addition to the number of patients residing in hospitals, there is a growing number of unrecovered patients on parole. The number on parole and the total number of patients, by region, are shown in table 4.

There were 49,119 patients on parole at the end of 1935. This represents 10.5 percent of the total number of patients on the books of the hospitals. The Mountain States had the lowest proportion of paroled patients, 8.7 percent, and the South Atlantic States had the highest proportion, 17.3 percent.

TABLE 4.—*Patients in the hospital, on parole and total on books, by region, 1935*

Region	Patients on books		Patients in hospital		Patients on parole	
	Patients	Percent	Patients	Percent	Patients	Percent
New England	41,700	100	38,035	91.2	3,665	8.8
Middle Atlantic[1]	125,038	100	113,276	90.6	11,762	9.4
East North Central	92,576	100	84,079	90.8	8,497	9.2
West North Central	47,361	100	41,836	88.3	5,525	11.7
South Atlantic[2]	50,321	100	41,591	82.7	8,730	17.3
East South Central	23,657	100	21,536	91.0	2,121	9.0
West South Central	32,802	100	28,954	88.3	3,848	11.7
Mountain	11,804	100	10,782	91.3	1,022	8.7
Pacific	35,226	100	31,533	89.5	3,693	10.5
United States[3]	465,903	100	416,784	89.5	49,119	10.5

[1] Does not include patients with mental disease in city and county hospitals recorded in New York State.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

The status of a paroled patient is not the same in all States. In some of the States every discharged patient is placed on parole for a year after discharge and his name is removed from the books of the

hospital at the end of that year, if he is not readmitted before that time. In other States, the discharged patients are removed from the books immediately after discharge, and only doubtful cases are paroled. For this reason, large interregional variations in parole rates are to be expected.

Patients without psychosis in hospitals for mental disease.—Not all the patients in the hospitals for mental disease are diagnosed as "with psychosis." In the country as a whole about 12,000 patients,[5] or 3 percent of the total population of hospitals for mental disease, are diagnosed as "without psychosis." There is much interregional variation in this respect. The data are shown in table 5.

TABLE 5.—*Proportion of patients diagnosed as with and without psychosis in all hospitals for mental disease, by region, 1935*

Region	Total number of patients in all hospitals	Patients with psychosis [2]		Patients without psychosis [2]	
		Patients	Percent	Patients	Percent
New England	38,202	37,476	98.1	726	1.9
Middle Atlantic [1]	113,625	112,943	99.4	682	0.6
East North Central	83,563	80,722	96.6	2,841	3.4
West North Central	42,372	41,313	97.5	1,059	2.5
South Atlantic [3]	41,356	38,833	93.9	2,523	6.1
East South Central	22,008	21,106	95.9	902	4.1
West South Central	29,248	27,113	92.7	2,135	7.3
Mountain	10,452	9,804	93.8	648	6.2
Pacific	31,240	30,646	98.1	594	1.9
United States [4]	417,748	405,558	97.1	12,190	2.9

[1] Does not include city and county hospitals recorded in New York State.
[2] Based on the percentage of patients with and without psychosis in State hospitals in 1933.
[3] Excluding the District of Columbia.
[4] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933 and 1935. United States Veterans Remaining Under Hospital Treatment in All Hospitals, by Hospital and Veterans' State of Residence, July 1, 1935, U. S. Veterans' Administration.

The proportion of patients diagnosed as without psychosis in State hospitals for mental disease varies from less than 1 percent in the Middle Atlantic States to 7.3 percent in the West South Central region.

The large proportion of patients diagnosed as without psychosis in some States is occasioned by the fact that the facilities for the mentally deficient and epileptic are very inadequate. Consequently the State hospitals must admit these patients.

Distribution of patients by diagnosis in State hospitals.—The annual census conducted by the Bureau of the Census does not call for the distribution of resident patients by diagnosis. The last year for which such data are available is 1933. In that year there were 333,000 patients in the State hospitals. These patients constitute about 85 percent of all patients in hospitals for mental disease. In order to present a clear and easily comprehensible picture of the distribution of patients, by the various diagnoses, a grouping was made

[5] Based on the percentage of patients with and without psychosis in State hospitals in 1933.

of the 22 diagnostic classifications into which the patients are distributed. The grouping is based partly on certain underlying similarities in the various diseases and partly on statistical exigencies.

The first group consists of those mental diseases that are largely associated with exogenous factors: Alcoholic psychoses, psychoses with syphilis, and psychoses due to drugs.

The second group consists of the mental diseases associated with the senium: Psychoses with cerebral arteriosclerosis and senile dementia.

The third group consists of the disorders of psychogenic origin or without clearly defined tangible cause or structural change: Dementia praecox, manic-depressive psychosis, paranoia or paranoid condition, involutional melancholia, psychoneuroses and neuroses,[6] and psychosis with psychopathic personality. These diseases are grouped together in the classification suggested in the Statistical Manual for the Use of Hospitals for Mental Disease (*5*). Some workers have tended to regard this group of diseases as of constitutional and hereditary origin.

The fourth group contains all the other diseases that are classified with the psychoses: Psychosis with Huntington's chorea, with brain tumor, with other brain or nervous diseases, with pellagra, with other somatic diseases, traumatic psychoses, epileptic psychoses, psychosis with mental deficiency, and undiagnosed (including unknown) conditions.

The fifth group consists of all the patients who are diagnosed as without psychosis.

The data by major groupings are shown in table 6.

TABLE 6.—*Distribution of resident patients in State hospitals for mental disease in the United States, by diagnosis, 1933*

Diagnosis	Number	Percent
I. Diseases associated with exogenous causes	27,990	8.4
Alcoholic psychosis	8,340	2.5
Psychoses with syphilis	19,170	5.8
With cerebral syphilis	3,780	1.1
General paralysis [1]	15,390	4.6
Due to drugs, etc	480	.1
II. Diseases of the senium	27,693	8.3
With cerebral arteriosclerosis	13,903	4.2
Senile	13,790	4.1
III. Diseases of psychogenic origin (or without clearly defined tangible cause or structural change)	211,241	63.5
Functional psychoses	189,380	57.0
Dementia praecox	150,092	45.1
Manic-depressive psychoses	39,288	11.8
Paranoia or paranoid conditions	10,380	3.1
Involutional melancholia	5,744	1.7
Psychoneuroses and neuroses	2,527	.8
With psychopathic personality	3,210	1.0

[1] Now designated as "general paresis."

[6] These two conditions, strictly speaking, should not be classified with the psychoses. However, since the majority of patients in this category who are admitted to the hospital are severe cases involving serious behavior disorders, they are classified with the psychoses since they most resemble patients in that category.

TABLE 6.—*Distribution of resident patients in State hospitals for mental disease in the United States, by diagnosis, 1933*—Continued

Diagnosis	Number	Percent
IV. Other diseases with psychosis	55,500	16.7
With Huntington's chorea	514	.2
With brain tumor	75	.0
With other brain or nervous diseases	3,375	1.0
With pellagra	1,169	.4
With other somatic diseases	2,563	.8
Traumatic	1,058	.3
Epileptic psychoses	10,193	3.1
With mental deficiency	18,444	5.5
Undiagnosed and unknown	18,109	5.4
Total with psychosis	322,424	97.0
V. Without psychosis	10,093	3.0
Epilepsy	632	.2
Alcoholism	1,183	.4
Drug addiction	206	.1
Psychopathic personality	621	.2
Mental deficiency	5,944	1.7
Others	1,507	.4
Grand total	332,517	100.0

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

Exogenous causes.—The diseases associated with exogenous causes account for 8.4 percent of all patients in State hospitals for mental disease. Of the total number of 28,000 patients in this group, 8,000, or 2.5 percent of the grand total, were diagnosed as having alcoholic psychosis and 19,000, or 6 percent, as having psychoses associated with syphilis.

Senium.—The diseases associated with the senium are equal in prevalence to the first group. About half of the 28,000 patients in this group are diagnosed in the category of psychosis with arteriosclerosis and the other half in the category of senile dementia.

Diseases of psychogenic origin.—The diseases classified in the group of psychogenic origin (or without clearly defined tangible cause or structural change) account for nearly two-thirds of all the patients in hospitals for mental disease. Of the total of 211,000 patients in this group, 190,000, or 57 percent, are classified in the group of functional psychoses (dementia praecox and manic-depressive psychosis); 10,000, or 3 percent, in the category of paranoia or paranoid conditions; 5,700, or almost 2 percent, in the category of involutional melancholia; 2,500, or 1 percent, in the category of psychoneuroses and neuroses; and 3,200, or 1 percent, in the category with psychopathic personality.

The largest single group, dementia praecox, accounts for fully 45 percent of all patients in the State hospitals.

Other diseases with psychosis.—In the miscellaneous category of other psychoses are found about 17 percent of all the patients. Of the 55,000 patients in this category, 18,000, or 5.5 percent, are in the

group of psychosis with mental deficiency; 10,000, or 3 percent, are in the group of psychosis with epilepsy; 18,000, or 5.5 percent, are undiagnosed; and the remaining 8,000, or 3 percent, are scattered in 6 other diagnostic groupings.

Without psychosis.—About 10,000, or 3 percent, of all the patients are diagnosed as without psychosis. Of this number, 6,000 are diagnosed as mentally deficient, 1,200 alcoholics, 632 epileptics, 621 with psychopathic personality, 206 with drug addiction, and 1,500 as "others without psychosis."

The figures presented above for the entire country are not uniformly applicable in all the regions. Considerable differences exist for the various diagnoses. Some of these differences no doubt reflect differences in the cultural and socio-economic patterns of the regions, others may reflect differences in fashions in diagnoses, while still others may be the result of endemic differences.

Disease-age-specific rates.—In attempting to compare the prevalence of each disease by region it becomes necessary to relate the patients in each region to the general population of that region. The usual method is to calculate the rate for each disease per 100,000 of the general population. But it is clear that the total population is not the most useful base for calculating rates for all the mental diseases. In the case of senile dementia, for instance, it is misleading to base the rate on the total population, since children and younger adults are not subject to the risk of hospitalization for this disease. Furthermore, the populations of the different regions of the country vary greatly in their age composition. One region may show a higher hospitalization rate for senile dementia simply because it has a larger proportion of old people in its population than another region. It becomes necessary to determine for each diagnosis the age range from which most of the patients come.

In order to obtain comparable data in the various regions, it was arbitrarily decided to include only the middle 90 percent of the age distribution for each diagnosis. Thus, the age range from which the middle 90 percent of all patients with senile dementia are drawn is 60 to 89 years of age. This then becomes the age range for this disease, and in computing rates the number of patients is divided by the number of persons in the general population who are in this age range. The age range for each diagnosis is not available for the entire country. Since Massachusetts is the only State that provides such data for resident patients, the age ranges utilized in this study were based on the data for the State of Massachusetts.[7]

[7] It would have been better to exclude the 10 percent of patients that fall beyond the middle 90 percent. This was, however, impossible since age distributions of patients were available for the State of Massachusetts only.

The data for each of the major groupings are shown in table 7 and figure 1.[8]

Before interpreting the interregional differences it is necessary to bear in mind that the data are for State hospitals only. The patients in county and city hospitals, Veterans' Administration facilities, and private hospitals are not included. While they do not account for any appreciable number of patients in the country as a whole, they do account for a greater proportion of patients in some regions than in others. If these institutions included equal proportions of each of the various categories of disease, this comparison would still have been

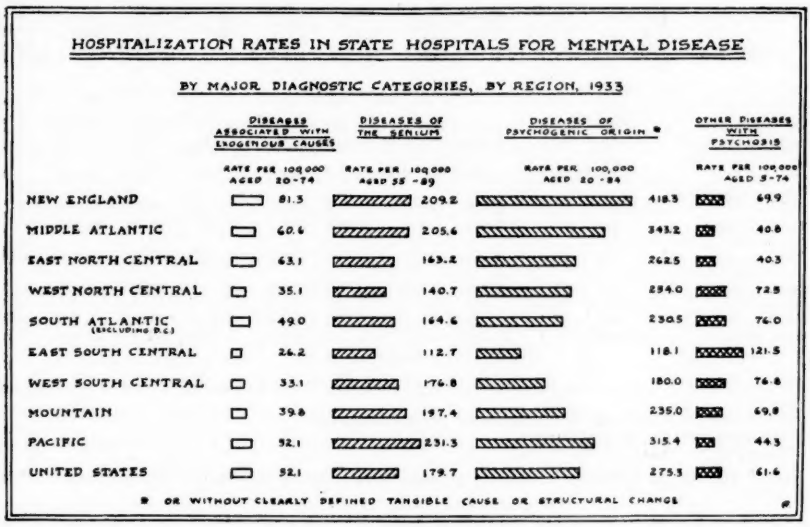
HOSPITALIZATION RATES IN STATE HOSPITALS FOR MENTAL DISEASE
BY MAJOR DIAGNOSTIC CATEGORIES, BY REGION, 1933
DISEASES ASSOCIATED WITH EXOGENOUS CAUSES
RATE PER 100,000 AGED 20-74
DISEASES OF THE SENILUM
RATE PER 100,000 AGED 55-89
DISEASES OF PSYCHOGENIC ORIGIN *
RATE PER 100,000 AGED 20-84
OTHER DISEASES WITH PSYCHOSIS
RATE PER 100,000 AGED 5-74
NEW ENGLAND 81.5 209.2 418.3 69.9
MIDDLE ATLANTIC 60.6 205.6 343.2 40.8
EAST NORTH CENTRAL 63.1 163.2 262.5 40.3
WEST NORTH CENTRAL 35.1 140.7 234.0 72.8
SOUTH ATLANTIC (EXCLUDING D.C.) 49.0 164.6 230.5 76.0
EAST SOUTH CENTRAL 26.2 112.7 118.1 121.5
WEST SOUTH CENTRAL 33.1 176.8 180.0 76.8
MOUNTAIN 39.8 197.4 235.0 69.8
PACIFIC 52.1 231.3 315.4 44.3
UNITED STATES 52.1 179.7 275.3 61.6
* OR WITHOUT CLEARLY DEFINED TANGIBLE CAUSE OR STRUCTURAL CHANGE

FIGURE 1.

adequate. But some of the diseases, general paresis, for instance, have a proportionately higher representation in patients outside of the State hospitals, especially in the Veterans' Administration facilities, than do some of the other diseases. For this reason, the data must be interpreted with caution. They nevertheless give the most adequate comparison that is available at the present time.

The rates for the District of Columbia are higher than the rates for any of the individual States and for the regions. This is due to the fact that St. Elizabeths, the mental hospital for the District of Columbia, does not limit itself to District of Columbia residents but draws its patients from the entire country. The rates for the District of Columbia are, for this reason, not given separately or included in the South Atlantic region but they are included in the total for the United States.

[8] Rates for each diagnosis separately are given in tables B, C, D, E, F, and G on pp. 77 to 79 of the appendix.

Total hospitalization rate.—The total hospitalization rate for the United States is 375.5 per 100,000 persons aged 15 and over. This rate varies from 260.1 in the East South Central region to 532.1 in the New England region, as shown in table 7.

TABLE 7.—*Hospitalization rates*[1] *in State hospitals for mental disease by major groupings of diagnoses, by region, 1933*

Region	Diseases associated with exogenous causes		Diseases of the senium		Diseases of psychogenic origin[2]		Other diseases with psychosis		Total	
	Patients	Rate per 100,000 persons aged 30–74	Patients	Rate per 100,000 persons aged 55–89	Patients	Rate per 100,000 persons aged 20–84	Patients	Rate per 100,000 persons aged 10–59	Patients	Rate per 100,000 persons aged 15 and over
New England	3,150	81.3	2,666	209.2	22,346	418.3	4,167	69.9	32,329	532.1
Middle Atlantic	7,352	60.6	6,898	205.6	58,842	343.2	8,051	40.8	81,143	414.8
East North Central	7,279	63.1	5,526	163.2	42,588	262.5	7,413	40.3	62,806	340.2
West North Central	2,078	35.1	2,660	140.7	21,266	254.0	6,962	72.5	32,966	342.3
South Atlantic[3]	2,348	49.0	2,572	164.6	19,983	230.5	8,427	76.0	33,330	321.5
East South Central	975	26.2	1,178	112.7	6,624	118.1	8,630	121.5	17,407	260.1
West South Central	1,518	33.1	2,101	176.8	12,665	180.0	6,813	76.8	23,097	276.7
Mountain	612	39.8	839	197.4	5,146	235.0	1,848	69.8	8,445	332.1
Pacific	2,191	52.1	2,929	231.3	18,293	315.4	2,769	44.3	26,182	404.8
United States[4]	27,990	52.1	27,693	179.7	211,241	275.3	55,500	61.6	322,424	375.5

[1] Does not include patients diagnosed as without psychosis. They will be considered in a subsequent paper.
[2] Or without clearly defined tangible cause or structural change.
[3] Excluding the District of Columbia.
[4] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

Diseases associated with exogenous causes.—For diseases due to exogenous causes the highest rate is found in the New England region, with the Middle Atlantic region and the East North Central region not far behind. The lowest rate is found in the East South Central, West South Central, and West North Central regions.

Of the psychoses associated with exogenous causes, the highest rate is for the psychoses associated with syphilis, 35.7 per 100,000 persons aged 30 to 74. The rate is highest in the East North Central region and in the East South Central region. Some of the differences are no doubt due to the exclusion of the patients in the Veterans' Administration facilities from this study.

The highest rate for alcoholic psychoses is found in New England and the lowest in the East South Central region.

Diseases of the senium.—The diseases of the senium are most frequently hospitalized in the Pacific region and least often in the East South Central region. It is interesting to note that the two diagnostic categories in this group are distributed among the regions in a complementary way; that is, regions in which one of the categories has a high

hospitalization rate tend to be characterized by a low hospitalization rate for the second category. Thus, the Middle Atlantic region has the highest rate for psychoses with cerebral arteriosclerosis but next to the lowest rate for senile dementia. On the other hand, the South Atlantic region stands seventh from the top in psychoses with cerebral arteriosclerosis and only fourth from the top in senile dementia. It is quite likely that some of the differences between the two conditions are due more to differences in methods of classification and diagnosis than to endemic differences in the population.

Diseases of psychogenic origin.—The disorders of psychogenic origin are most frequently hospitalized in the New England region and least frequently in the East South Central region.

The most prevalent disease in the group of psychogenic origin is dementia praecox and the next in order of prevalence is manic-depressive psychosis. The rate for dementia praecox is, like the total rate, highest in New England and lowest in the East South Central region. The rate for manic-depressive psychoses is highest in the South Atlantic region and lowest in the East South Central region. These two diagnoses resemble the two diagnostic categories of the diseases of the senium in that they also are complementary. Thus, the Middle Atlantic region has next to the highest hospitalization rate for dementia praecox and the third from the lowest rate for manic-depressive psychoses, while the South Atlantic region, which is third from the lowest in dementia praecox, stands first in manic-depressive psychoses. In comparing the regions it seems more advisable to combine the two rates in the general category of functional psychoses. For the combined categories the highest rate is found in the New England region and the lowest in the East South Central region.

The Mountain region shows the highest rate for paranoia and paranoid conditions and the East South Central region shows the lowest rate.

Involutional melancholia is highest in New England and lowest in the East South Central region. Patients in the category of psychoneuroses and neuroses are hospitalized more frequently in the West North Central region and least frequently in the Pacific region and East South Central region.

Other diseases with psychosis.—The miscellaneous group shows the highest rate in the East South Central region and the lowest rate in the Middle Atlantic and East North Central regions.

The three largest divisions in this group are psychosis with mental deficiency, psychoses with epilepsy, and the undiagnosed group. Before drawing any conclusions from regional comparisons of mental deficiency and epilepsy it should be borne in mind that differences

exist in the diagnostic procedure for these two disorders. It is better to base comparison of the rates for these conditions on all patients, both in the group with psychosis and without psychosis.

The region showing the highest rate for undiagnosed patients is the East South Central region. This region also has the lowest rate for the other categories. It is likely that some of the categories in which the region appeared to be quite low would approach the expected rates more closely if the 5,500 patients in the undiagnosed category were distributed in their proper places.

It is interesting to note that throughout the southern regions the rate for pellagra is from 6 to 8 per 100,000 of the population aged 25 to 69. The rate in the other regions is close to zero. This difference reflects the higher prevalence of pellagra in the general population of the South as compared with other regions. Almost 95 percent of the deaths due to pellagra in the general population in the United States in 1933 were in the South Atlantic and East and West South Central regions.

Without psychosis.—The largest category in the group without psychosis is mental deficiency. In most States the mental defectives without psychosis are segregated in separate institutions where proper training is given to help them return to productive life in the community. In some States, however, no separate facilities are available. This is notably true in some of the southern States and mountain States. A similar condition exists with regard to the epileptic patient. Since these conditions will be treated separately in a subsequent paper, they will not be discussed further here.

Variability of hospitalization rates.—It has already been pointed out that the disease rates are not constant but vary considerably from region to region. The best available measure of this variability is the coefficient of variation of the rates. These are shown in table 8.

TABLE 8.—*Coefficients of variation for hospitalization rates in State hospitals for mental disease in the geographic regions by major diagnostic categories*

	Diseases associated with exogenous causes	Diseases of the senium	Diseases of psychogenic origin [1]	Other diseases with psychosis	Total
Average [2] rate per 100,000 of the general population	52.7	178.6	272.0	61.4	360.4
Standard deviation [3]	14.7	30.0	74.6	23.8	67.8
Coefficient of variation [3]	27.9	16.8	27.4	38.8	18.8

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.
[3] The standard deviation is a measure of variability of the individual values for each region, above or below the average value for the country as a whole. The standard deviations for the groups of diseases cannot be directly compared because the averages from which they were computed vary considerably in value. The coefficient of variation corrects for these differences and makes direct comparison possible.

It will be noted that the diseases of the senium show the least variation, while the diseases associated with exogenous causes and the diseases of psychogenic origin (or without clearly defined tangible

cause or structural change) have a coefficient of variation that is nearly twice as high. It may be concluded that the accumulation of hospitalized patients in the old-age group is less dependent upon the place of residence of the patient than is the case in some of the other diseases. However, the difference in hospitalization rates may also be due to the fact that these rates are based on State hospital patients only. If complete data for all the hospitals had been at hand, the variability in hospitalization rates might be much lower.

SUMMARY

Mental diseases are the Nation's largest hospital problem, accounting for the occupancy of more beds than all other diseases combined. Unlike other diseases, mental diseases are primarily a governmental burden, more than 95 percent of all patients being cared for in State, Federal, and other governmentally controlled institutions, and only 5 percent in private hospitals.

There are four major subdivisions in the group of mental diseases. The largest subdivision is the group of diseases of psychogenic origin (or without clearly defined tangible cause or structural change). Nearly two-thirds of all the patients in State hospitals for mental disease are in this category. Diseases associated with exogenous causes and diseases of the senium come next in order of importance, with 8.5 percent in each. Patients diagnosed as without psychosis account for 3 percent of the total and the miscellaneous category accounts for about 17 percent.

The various regions of the country do not hospitalize patients in equal proportion to their general population. Some States hospitalize proportionately twice as many patients as do other States. The rates vary with the different diseases. Diseases of the senium show the smallest variation in hospitalization rate while the diseases of psychogenic origin and those associated with exogenous causes vary nearly twice as much as diseases of the senium.

2. TREND OF MENTAL DISEASE

Total admissions.—The best index of the present trend of mental disease is the number of patients admitted to the hospital annually. The annual admissions, however, include many individuals who have been previously admitted to hospitals. To count them again each time they are readmitted would tend to give a false picture of the trend of mental disease, for nearly 21 percent of the total annual admissions are readmissions. Hence only the number admitted for the first time, the first admissions, are taken as an index of the present trend in mental disease. Table 9 presents the number of first admissions for 1935, by type of hospital.

First admissions.—There were 98,593 first admissions to mental hospitals in 1935. A little less than three-fourths of these were admitted to State hospitals, 16.6 percent to private hospitals, 7 percent to county and city hospitals, and 2.7 percent to Veterans' Administration facilities. It is interesting to note that the private hospitals, with only 2.6 percent of the hospitalized patients, account for 16.6 percent of the first admissions. This is an indication of the rather rapid turnover in the private hospitals, as compared with the slower turnover in the State hospitals. The latter take care of 84.8 percent of the hospitalized patients, but admit only 73.5 percent of the first admissions.

There are considerable differences among the regions in the proportion of first admissions to the various institutions. The greatest variation is in the proportion of first admissions to private institutions, which varies from 9.5 percent in the Middle Atlantic region to 22.5 percent in the New England region.

TABLE 9.—*Distribution of first admissions of patients to hospitals for mental disease by type of control of hospital, by region, 1935*

Region	State hospitals		County and city hospitals [1]		Veterans' Administration facilities		Private hospitals		Total	
	Patients	Percent	Patients	Percent	Patients	Percent	Patients	Percent	Patients	Percent
New England	5,774	75.7	.....	.....	132	1.7	1,718	22.5	7,624	100
Middle Atlantic	17,083	72.2	3,874	16.4	442	1.9	2,256	9.5	23,655	100
East North Central	13,945	69.1	1,617	8.0	584	2.9	4,041	20.0	20,187	100
West North Central	6,592	73.2	429	4.8	121	1.3	1,863	20.7	9,005	100
South Atlantic [2]	8,408	74.2	148	1.3	474	4.2	2,299	20.3	11,329	100
East South Central	5,182	71.9	766	10.6	340	4.7	916	12.7	7,204	100
West South Central	6,297	82.7	287	3.8	242	3.2	786	10.3	7,612	100
Mountain	1,694	70.5	.....	.....	206	8.6	503	20.9	2,403	100
Pacific	6,649	76.1	.....	.....	156	1.8	1,936	22.2	8,741	100
United States [3]	72,438	73.5	7,119	7.2	2,697	2.7	16,337	16.6	98,593	100

[1] Does not include patients in county and city hospitals recorded in New York State.
[2] Excluding the District of Columbia. [3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

The rates of first admission per 100,000 of the general population for 1935 are shown in table 10.

TABLE 10.—*First admissions of all patients to hospitals for mental disease, by region, 1935*

Region	Number of patients	Rate per 100,000 of total population	Region	Number of patients	Rate per 100,000 of total population
New England	7,624	89.7	East South Central	7,204	68.5
Middle Atlantic [1]	23,655	86.8	West South Central	7,612	59.9
East North Central	20,187	78.9	Mountain	2,403	64.1
West North Central	9,005	65.7	Pacific	8,741	101.2
South Atlantic [2]	11,329	69.6	United States [3]	98,593	77.3

[1] Does not include county and city hospitals recorded in New York State.
[2] Excluding the District of Columbia. [3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Diseases, Bureau of the Census, U. S. Department of Commerce, 1935.

The first admission rate per 100,000 of the general population for the entire country is 77.3. The Pacific region, with a rate of 101.2, is highest while the West South Central region, with a rate of 59.9, is lowest. To some extent the crude interregional comparisons are more apparent than real since the proportion of the general population exposed to the risk of hospitalization varies considerably from region to region. Furthermore, the total first admission rate, comprising as it does patients diagnosed as with psychosis as well as those diagnosed as without psychosis, does not present a meaningful basis for comparison. The proportions of first admissions diagnosed as "with psychosis" and as "without psychosis" are shown in table 11.

TABLE 11.—*First admissions with and without psychosis to all hospitals for mental disease, by region, 1935*

Region	Total number of patients	With psychosis		Without psychosis	
		Patients	Percent	Patients	Percent
New England	7,624	6,804	89.2	820	10.8
Middle Atlantic [1]	23,655	22,254	94.1	1,401	5.9
East North Central	20,187	17,661	87.5	2,526	12.5
West North Central	9,005	7,634	84.8	1,371	15.2
South Atlantic [2]	11,329	8,775	77.5	2,554	22.5
East South Central	7,204	5,830	80.9	1,374	19.1
West South Central	7,612	6,661	87.5	951	12.5
Mountain	2,403	1,898	79.0	505	21.0
Pacific	8,741	7,189	82.2	1,552	17.8
United States [3]	98,593	85,533	86.8	13,060	13.2

[1] Does not include county and city hospitals recorded in New York State.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

The proportion of first admissions diagnosed as without psychosis was 13 percent for the entire country, but there was considerable interregional variation in this proportion. It varied from about 6 percent in the Middle Atlantic States to nearly 23 percent in the South Atlantic States. The high proportion of first admissions without psychosis in the South Atlantic region is no doubt due to the fact that mental defectives and epileptics without psychosis are hospitalized in hospitals for mental disease in these States.

Distribution of first admissions by diagnosis.—The distribution of patients by major categories of diagnosis is shown in table 12. The same classification that was used in describing the resident population has been utilized. The only difference between the two classifications is their inclusiveness; while the classification of resident patients included only patients in State hospitals for mental disease for the year 1933, the classification of first admissions includes patients in all hospitals for mental disease for the year 1935.

TABLE 12.—*Distribution of first admissions to all hospitals for mental disease in the United States, by diagnosis, 1935*

Diagnosis	Number	Percent
I. Diseases associated with exogenous causes	14,326	14.5
Alcoholic psychosis	4,879	4.9
Psychoses with syphilis	8,870	9.0
General paresis	7,390	7.5
With other forms of syphilis of the central nervous system	1,480	1.5
Due to drugs, etc	577	.6
II. Diseases of the senium	17,588	17.8
With cerebral arteriosclerosis	9,841	10.0
Senile psychosis	7,747	7.8
III. Diseases of psychogenic origin, (or without clearly defined tangible cause or structural change)	40,093	40.7
Functional psychoses	31,279	31.7
Dementia praecox	19,105	19.4
Manic-depressive psychosis	12,174	12.3
Paranoia or paranoid conditions	1,659	1.7
Involutional psychoses	2,748	2.8
Psychoneuroses	3,321	3.4
With psychopathic personality	1,086	1.1
IV. Other diseases with psychosis	13,526	13.7
With epidemic encephalitis	318	.3
With other infectious diseases	503	.5
Traumatic	542	.5
With other disturbances of circulation	626	.6
Due to other metabolic, etc., diseases	1,509	1.6
Due to new growth	158	.2
With organic changes of the nervous system	928	.9
With mental deficiency	2,974	3.0
With convulsive disorders	1,976	2.0
Undiagnosed and unknown	3,992	4.1
Total with psychosis	85,533	86.8
V. Without psychosis	13,060	13.2
Epilepsy	365	.4
Alcoholism	6,379	6.5
Drug addiction	887	.9
Psychopathic personality	589	.6
Mental deficiency	1,437	1.5
Others	3,403	3.5
Grand total	98,593	100.0

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

There are about 99,000 first admissions to the hospitals for mental disease. Of this number some 15,000, or 15 percent, were diagnosed in the group of diseases associated with exogenous causes; 18,000, or 18 percent, in the group of diseases of the senium; 40,000, or 40 percent, in the group of diseases of psychogenic origin (or without clearly defined tangible cause or structural change), and some 14,000, or 14 percent, in the group of other mental diseases. About 13,000, or 13 percent, were diagnosed as without psychosis.

Exogenous causes.—Of the group of diseases associated with exogenous causes 5,000, or 5 percent of the total, were with alcoholic psychoses, and about 9,000, or 9 percent, with syphilitic psychoses. Only some 600 were diagnosed as with psychosis due to drugs and similar causes.

Senium.—Of the group of diseases of the senium, about 10,000, or 10 percent of the total, were diagnosed as with cerebral arteriosclerosis and some 8,000, or 8 percent of the total, with senile dementia.

Diseases of psychogenic origin.—The group of diseases of psychogenic origin (or without clearly defined tangible cause or structural change), constitutes the largest of all the groups. In this group, the largest single category is that of dementia praecox with 19,000 first admissions, or 19 percent of the total, and the second largest is manic-depressive psychosis with 12,000 first admissions, or 12 percent of the total. Together these two diseases constitute the group known as functional psychoses and they account for nearly one-third of all the first admissions.

There were some 1,600 first admissions in the group of paranoias, almost 3,000 in the involutional psychoses, another 3,000 in the psychoneuroses, and about 1,100 in the group with psychopathic personality.

Other diseases with psychosis.—The largest single category in the group of other diseases with psychosis is the group with mental deficiency, with some 3,000 first admissions, and next in order of size is the group with convulsive disorders, with some 2,000 first admissions. About 4,000 first admissions are undiagnosed or of unknown disease.

Without psychosis.—In the group diagnosed as without psychosis, the largest single category is alcoholism, with some 6,400 first admissions. The next largest category is mental deficiency, with some 1,500 first admissions. There are 3,400 first admissions in the miscellaneous category in the group diagnosed as without psychosis.

The figures presented for the entire country do not characterize the various regions. In order to present the interregional variation, the rates per 100,000 liable to hospitalization are presented. These data are shown in table 13. In computing these rates only the middle 90 percent of the age range corresponding to each diagnosis was utilized as the population base in the denominator of the rate, as was explained previously in the section dealing with hospitalized patients, but in the numerator of the rate the entire range of cases was used. The age limits are not always the same for first admissions as for resident patients, but this is to be expected since the ages of patients at the time of their first admission need not necessarily be as high as the ages of the resident patients who have been in the hospital for an extended period of time. Furthermore, the age range of resident patients was computed on the basis of the data provided by only one State, Massachusetts, while the data for first admissions by diagnosis were available for State hospitals for mental disease for the entire country in 1933 (*6*). Table 13 and figure 2 show the first admission rates for the major groups of the mental diseases.[9]

[9] Rates for each diagnosis separately are given in tables H, I, J, K, L, and M on pp. 80 to 82 of the appendix.

TABLE 13.—*First admission rates to hospitals for mental disease, by major groupings of diagnoses, by region, 1935*

Region	Diseases associated with exogenous causes		Diseases of the senium		Diseases of psychogenic origin [1]		Other diseases with psychosis		Total	
	Patients	Rate per 100,000 persons aged 25–64	Patients	Rate per 100,000 persons aged 45 and over	Patients	Rate per 100,000 persons aged 10–69	Patients	Rate per 100,000 persons aged 5–74	Patients	Rate per 100,000 persons aged 15 and over
New England	932	22.4	1,769	78.2	3,257	49.0	846	11.3	6,804	109.9
Middle Atlantic [2]	3,645	27.0	5,446	85.5	10,377	48.2	2,786	11.5	22,254	112.1
East North Central	3,483	27.6	3,240	52.3	7,880	42.5	3,058	13.4	17,661	95.0
West North Central	977	15.1	1,762	51.8	3,788	35.8	1,107	9.2	7,634	78.2
South Atlantic [3]	1,474	22.1	1,184	40.6	4,419	36.5	1,698	12.0	8,775	82.3
East South Central	991	23.0	921	44.9	2,742	35.4	1,176	13.0	5,830	84.9
West South Central	1,071	19.8	1,068	45.4	3,050	32.0	1,472	13.3	6,661	78.3
Mountain	331	19.6	475	58.5	743	26.1	347	10.6	1,898	74.2
Pacific	1,266	27.4	1,581	66.8	3,389	48.7	953	12.3	7,189	108.6
United States [4]	14,326	23.9	17,588	60.0	40,093	40.6	13,526	12.0	85,533	95.0

[1] Or without clearly defined tangible cause or structural change.
[2] Does not include county and city hospitals recorded in New York State.
[3] Excluding the District of Columbia.
[4] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

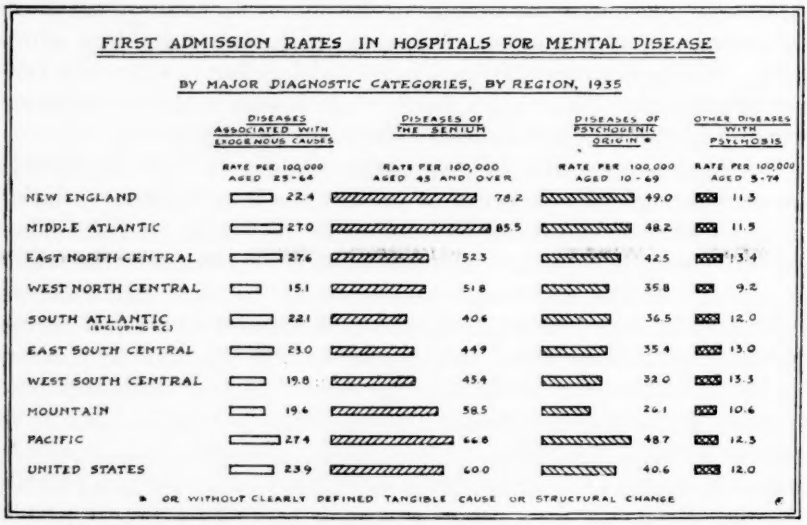
FIRST ADMISSION RATES IN HOSPITALS FOR MENTAL DISEASE
BY MAJOR DIAGNOSTIC CATEGORIES, BY REGION, 1935
DISEASES ASSOCIATED WITH EXOGENOUS CAUSES
RATE PER 100,000 AGED 25-64
DISEASES OF THE SENIUM
RATE PER 100,000 AGED 45 AND OVER
DISEASES OF PSYCHOGENIC ORIGIN *
RATE PER 100,000 AGED 10-69
OTHER DISEASES WITH PSYCHOSIS
RATE PER 100,000 AGED 5-74
NEW ENGLAND 22.4 78.2 49.0 11.3
MIDDLE ATLANTIC 27.0 85.5 48.2 11.5
EAST NORTH CENTRAL 27.6 52.3 42.5 13.4
WEST NORTH CENTRAL 15.1 51.8 35.8 9.2
SOUTH ATLANTIC (EXCLUDING D.C.) 22.1 40.6 36.5 12.0
EAST SOUTH CENTRAL 23.0 44.9 35.4 13.0
WEST SOUTH CENTRAL 19.8 45.4 32.0 13.3
MOUNTAIN 19.6 58.5 26.1 10.6
PACIFIC 27.4 66.8 48.7 12.3
UNITED STATES 23.9 60.0 40.6 12.0
* OR WITHOUT CLEARLY DEFINED TANGIBLE CAUSE OR STRUCTURAL CHANGE

FIGURE 2.

Total first admission rates.—The first admission rate for the United States for all types of mental disease was 95.0 per 100,000 of the total population aged 15 and over. The corresponding rates for the regions varied from 74.2 in the Mountain region to approximately 110 in the Pacific, New England, and Middle Atlantic regions.

Diseases associated with exogenous causes.—The rate for diseases associated with exogenous causes for the United States was 23.9 per 100,000 persons aged 25 to 64, and the corresponding rates for the regions varied from 15 in the West North Central region to 27 in the Middle Atlantic, East North Central, and Pacific regions.

The category with the highest rate in the group of diseases associated with exogenous causes is the group of psychoses with syphilis, where the rate is 14.9 per 100,000 aged 25 to 64. The next highest rate is for alcoholic psychoses. For the entire country the rate for alcoholic psychoses was 8.1 per 100,000 aged 25 to 64, while the highest rate, 11.8, was found in New England and the lowest rate, 3.8, is shared by 2 regions, the West North Central and the West South Central. This low rate is of interest when it is remembered that most of the States in these 2 regions still have rigorous prohibition laws.

Diseases of the senium.—The rate for psychoses associated with the senium is 60.0 per 100,000 aged 45 and over. The highest rate, 85.5, is found in the Middle Atlantic region, and the lowest rate, 40, is found in the South Atlantic region. The 2 categories in this group of diseases tend to be inversely related, in the same way as the hospitalization rates for these 2 diagnostic groupings. It is likely that the interregional differences in the rates for these 2 diseases that appear on first analysis are due at least in part to regional fashions in diagnosis.

Diseases of psychogenic origin.—For disorders of psychogenic origin, the rate in the United States was 40.6 per 100,000 aged 10 to 69 and the rates for the regions varied from 26 in the Mountain region to about 49 in the New England, Middle Atlantic, and Pacific regions.

The largest rate in this group of diseases is found for the group of functional psychoses. For the entire country the rate is 32.7 per 100,000 aged 10 to 64. The 2 categories that comprise the functional psychoses also tend to be inversely related to each other in the same way that the 2 categories of the diseases of the senium were related.

Other diseases with psychosis.—The rate for first admissions in the group of other disorders was 12.0 per 100,000 aged 5 to 74. There was very little interregional variation in these psychoses, the range being from 9 in the West North Central region to 13 in the East North Central region. The category with the highest rate in this group is psychosis with mental deficiency, which has a rate of 2.8 for the entire country per 100,000 persons aged 5 to 59. "Psychoses with convulsive disorders" has one of the highest rates in this group of diseases, 1.8 per 100,000 aged 5 to 59.

Without psychosis.—The rates for first admissions to hospitals for mental disease diagnosed as without psychosis are not presented here

because they represent only part of the patients who are diagnosed as without psychosis, the vast majority being sent to institutions for mental deficiency and epilepsy.

First admissions by type of commitment.—First admissions have been classified by the Bureau of the Census into four types: (1) Official or judicial commitment, (2) voluntary, (3) temporary, and (4) observation. There is an additional category of "not reported." For the entire country, 90 percent of all first admissions to State hospitals for mental disease are under judicial commitment, and a little more than 9 percent are on a voluntary basis. The regions differ considerably in this respect as is shown in table 14.

TABLE 14.—*First admissions to State hospitals for mental disease by type of commitment, by region, 1933*

Region	Official		Voluntary		Temporary and observation		Not reported		Total number of patients
	Patients	Percent	Patients	Percent	Patients	Percent	Patients	Percent	
New England	2,959	54.6	137	2.5	2,321	42.7	1	0	5,417
Middle Atlantic	14,650	90.4	801	5.0	750	4.6			16,202
East North Central	12,395	89.2	1,470	10.6	40	.3			13,905
West North Central	6,182	96.2	208	3.3	37	.5			6,427
South Atlantic [1]	6,903	86.7	115	1.4	168	2.1	778	9.8	7,964
East South Central	4,877	99.8	2	0			6	.1	4,885
West South Central	5,166	89.0	127	2.2	114	2.0	398	1.9	5,805
Mountain	1,435	96.7	38	2.5	10	.7			1,483
Pacific	5,768	90.0	618	9.6	25	.3	2	0	6,413
United States [2]	61,202	88.2	3,516	5.1	3,465	5.0	1,185	1.7	69,368

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

The proportion of voluntary admissions is highest in the East North Central and Pacific regions and lowest in the East South Central region. The proportion of temporary and observation admissions is highest in the New England region and lowest in the East South Central States. The South Atlantic region has the highest proportion of first admissions not reported as to type.

First admissions by diagnosis and type of control of hospital.—Hospitals under different types of control do not draw equal proportions of the various diagnostic groups of mental disorders. This is not an unexpected finding since the different types of hospitals do not draw their patients uniformly from the general population. The Veterans' Administration facilities limit themselves to veterans, who are largely men aged 38 to 55. The private hospitals tend to draw their patients from the well-to-do classes while some of the city and county hospitals tend to receive manageable, milder patients. The proportions of first admissions in each category admitted to the various types of hospitals are shown in table 15 and figure 3.

TABLE 15.—*First admissions to hospitals for mental disease by type of control of hospital and by major diagnostic category, 1935*

Diagnosis	Total number of patients	Percentage distribution				Index			
		State hospitals	Private hospitals	County and city hospitals [1]	Veterans' Administration facilities	State hospitals	Private hospitals	County and city hospitals [1]	Veterans' Administration facilities
I. Diseases associated with exogenous causes	14,326	74.8	10.9	9.6	4.7	98.2	80.1	126.3	188.0
Alcoholic psychosis	4,879	68.1	18.5	9.5	3.9	89.4	136.0	125.0	156.0
Psychoses with syphilis	8,870	79.9	4.7	9.9	5.4	104.9	34.6	130.3	216.0
General paresis	7,390	80.3	4.2	9.8	5.8	105.4	30.9	128.9	232.0
With other forms of syphilis of the C. N. S	1,480	78.3	7.6	10.7	3.4	102.8	55.9	140.8	136.0
Due to drugs, etc	577	52.2	41.8	6.1	.....	68.5	307.4	80.3	.....
II. Diseases of the senium	17,588	83.6	8.5	7.3	.5	109.7	62.5	96.1	20.0
With cerebral arteriosclerosis	9,841	88.9	6.1	4.3	.7	116.7	44.9	56.6	28.0
Senile	7,747	77.0	11.6	11.1	.3	101.0	85.3	146.1	12.0
III. Diseases of psychogenic origin (or without clearly defined tangible cause or structural change)	40,093	73.6	17.3	6.8	2.3	96.6	127.2	89.5	92.0
Functional psychoses	31,279	76.6	7.9	6.7	1.8	100.5	58.1	88.2	72.0
Dementia praecox	19,105	78.3	11.3	7.7	2.7	102.8	83.1	101.3	108.0
Manic-depressive psychosis	12,174	73.9	19.7	5.2	1.3	97.0	144.9	68.4	52.0
Paranoia or paranoid conditions	1,659	67.1	20.1	9.9	2.8	88.1	147.8	130.3	112.0
Involutional psychoses	2,748	63.9	26.4	9.7	.....	83.9	194.1	127.6	.....
Psychoneuroses	3,321	58.3	33.7	3.7	4.4	76.5	247.8	48.7	176.0
With psychopathic personality	1,086	69.2	20.5	5.1	5.2	90.8	150.7	67.1	208.0
IV. Other diseases with psychosis	13,526	75.9	12.3	8.5	3.3	99.6	90.4	111.8	132.0
With epidemic encephalitis	318	85.8	6.6	7.5	.....	112.6	48.5	98.7	.....
With other infectious diseases	503	69.0	17.7	13.3	.....	90.6	130.1	175.0	.....
Traumatic	542	77.7	15.1	7.2	.....	102.0	111.0	94.7	.....
With other disturbances of circulation	626	73.6	10.4	16.0	.....	96.6	76.5	210.5	.....
Due to other metabolic, etc., diseases	1,509	77.0	12.0	11.0	.....	101.0	88.2	144.7	.....
Due to new growth	158	75.3	15.2	9.5	.....	98.8	111.8	125.0	.....
With organic changes of the nervous system	928	68.9	12.9	13.4	.....	90.4	94.9	176.3	.....
With mental deficiency	2,974	83.2	5.8	8.7	2.3	109.2	42.6	114.5	92.0
With convulsive disorders	1,976	84.6	4.1	7.5	3.7	111.0	30.1	98.7	148.0
Undiagnosed and unknown	3,992	67.4	20.9	5.3	6.4	88.5	153.7	69.7	256.0
Total	85,533	76.2	13.6	7.6	2.5	100.0	100.0	100.0	100.0

[1] Does not include city and county hospitals recorded in New York State.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

In the groups of diseases associated with exogenous causes about three-fourths are admitted to State hospitals, one-tenth to private hospitals, another tenth to the city and county hospitals, and about 5 percent to the Veterans' Administration facilities. In order to determine whether the three different types of hospitals tend to get an equal share of the patients in this group of diseases, the above proportions must be related to those expected from the total number of first admissions to each type of hospital. Thus, for the State hospitals, with 76 percent of all first admissions, the proportion of first admis-

sions in the category of diseases associated with exogenous causes, 74.8 percent, is only 98 percent, a little below the expected. For the private hospitals, with 13.6 percent of all first admissions, the obtained percentage, 10.9, is only 80 percent of the expected. In city and county hospitals and in Veterans' Administration facilities the numbers of first admissions are 126 and 188 percent, respectively, of the expected numbers of first admissions in this category. Apparently the State hospitals and private hospitals receive a proportion of patients smaller than average in the category of diseases associated with exogenous causes while the other two types of hospitals receive correspondingly larger proportions.

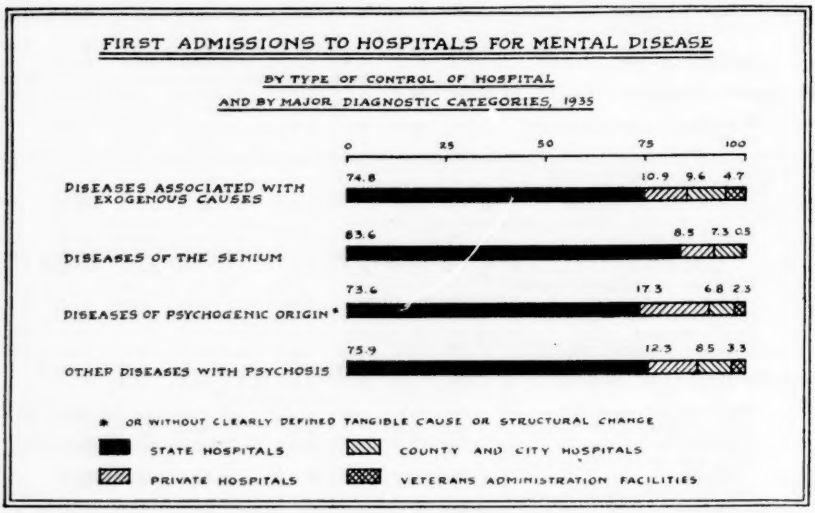

FIGURE 3.

In examining the individual psychoses in this group it is found that State hospitals get less than their share of the alcoholics and of the drug addicts, but get their due share of the syphilitic psychoses. The private hospitals, on the other hand, get only about one-third of their expected share of the syphilitic psychoses but from one to three times their share of the alcoholics and drug addicts. The city and county hospitals and the Veterans' Administration facilities exceed their share in each of the diagnoses in this group of diseases except drug addiction.

In the case of diseases of the senium, the Veterans' Administration facilities get less than their share, because of the relative youth of their patients, and the private hospitals also fall below their quota, but the State hospitals exceed their expected share somewhat. The city and county hospitals exceed their quota in senile dementia but fall below it in psychoses with cerebral arteriosclerosis.

For diseases of psychogenic origin or without clearly defined tangible cause or structural change, the private hospitals exceed their quota, while the other hospitals fall somewhat below their quota. The specific psychoses in which the private hospitals exceed their expected share are manic-depressive psychosis, paranoia, involutional psychoses, psychoneuroses, and psychopathic personality. Private hospitals fall slightly below their quota in dementia praecox.

The State hospitals fill their quota in dementia praecox, but fall somewhat below it in the other psychoses. They are especially low in the psychoneuroses and this holds true also of the city and county hospitals. The Veterans' Administration facilities are especially high in the psychoneuroses and in the category of psychopathic personality, and especially low in manic-depressive psychosis.

The total for other diseases with psychosis indicates that State hospitals receive the expected share of patients in this category, and city and county hospitals and Veterans' Administration facilities receive more than their expected share. The large index in the latter case is due to the fact that so large a proportion of patients in these hospitals have not been diagnosed.

Increase in age of first admissions.—Generally speaking, the relative number of first admissions in the younger age groups, below 50, is decreasing while the relative number above the age of 50 is increasing. During the last decade and a half the proportion below 50 has dropped by nearly 7 percent and a corresponding gain has occurred in the older age groups. Data for 1922 and 1936 are shown in table 16. It will be noted that not all the regions show the same decrease in the younger age groups and corresponding increase in the older age groups. The general trend is shown in figure 4.

TABLE 16.—*Percentages of first admissions by age groups to all hospitals for mental disease, 1922, and State hospitals for mental disease, 1936*

Region	Ages 29 and under		Ages 30 to 49		Ages 50 to 69		Ages 70 and over		Age unknown	
	1922	1936	1922	1936	1922	1936	1922	1936	1922	1936
New England	27.0	21.1	38.8	32.5	24.2	28.1	10.0	18.4	0.3	0.1
Middle Atlantic	24.4	20.6	41.6	36.7	23.7	26.9	9.6	14.8	.6	1.0
East North Central	21.2	19.4	45.3	40.8	24.0	27.5	8.3	12.1	1.2	.2
West North Central	21.9	18.8	41.8	37.0	22.8	28.1	8.5	14.5	5.0	1.4
South Atlantic	30.7	30.3	40.1	39.9	19.2	22.1	7.8	6.8	2.1	.7
East South Central	29.4	27.3	41.1	36.2	20.1	21.5	7.9	8.9	1.4	6.1
West South Central	30.1	27.1	44.1	40.1	18.8	22.8	5.8	7.5	1.3	2.4
Mountain	21.9	19.3	44.1	36.8	23.4	27.0	8.6	16.1	2.3	.7
Pacific	22.5	19.6	45.1	41.7	22.3	27.0	8.3	10.9	1.9	.6
United States	25.2	22.7	42.4	38.3	22.6	25.8	8.5	12.1	1.6	1.2

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1923 and 1936.

The greatest percentage decrease in first admissions among the younger age groups was in New England where the shift in ages of patients below 50 to the older age brackets was 12.2 points. The

Mountain region and Middle Atlantic States were next in order of size of shift. In the South Atlantic region there was a decrease of only 0.6 point in the proportion under 50 years of age.

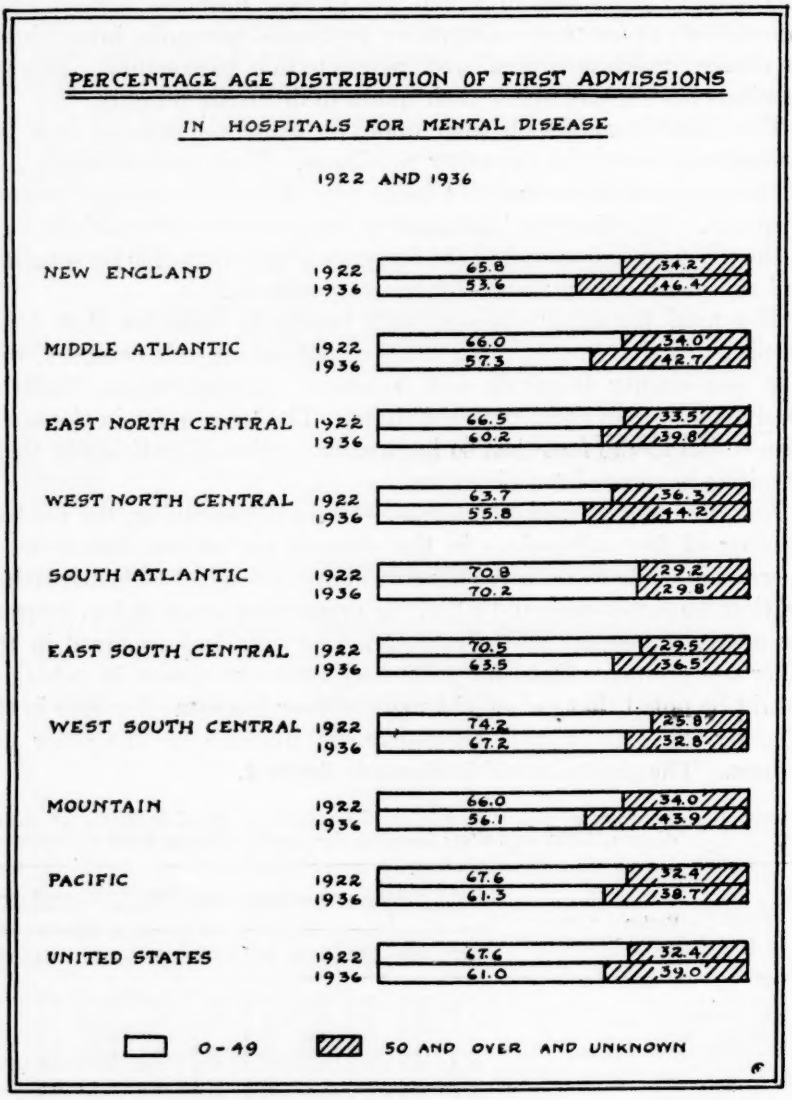

FIGURE 4.

Variability in first-admission rates.—A person in need of care because of a mental ailment can gain admission to a hospital more readily in some States than in others. Consequently considerable variation in first-admission rates is to be expected between regions. The variation in the first-admission rates by major diagnostic grouping is shown in table 17.

TABLE 17.—*Coefficients of variation of first-admission rates to hospitals for mental disease for the geographic regions by major diagnostic categories*

	Diseases associated with exogenous causes	Diseases of the senium	Diseases of psychogenic origin [1]	Other diseases with psychosis	Total
Average [2] rate per 100,000 of the general population	23.8	60.7	41.1	12.0	94.5
Standard deviation	4.3	16.4	6.5	1.4	14.0
Coefficient of variation	18.2	27.1	15.8	12.0	14.8

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.

The diseases of psychogenic origin show the least variation, while diseases of the senium show the most variation in first-admission rates. Apparently, the chances of gaining admission as a patient are most variable from region to region for diseases of old age and least variable for diseases of psychogenic origin and diseases associated with exogenous causes. A possible explanation of this difference may be found in the acute nature of the diseases in the last two categories. The acuteness of the disease and the consequent need of hospitalization tend to overcome regional differences in facilities for the care of these patients. This is not the case with regard to first admissions for diseases of the senium. If there are no facilities, patients of this type tend to be kept at home until vacancies occur. The miscellaneous category is also characterized by a low variability in first-admission rates. Here, too, most of the diseases are acute in nature and it is likely that patients in this category tend to be regarded as emergency cases and are given preference in admission.

SUMMARY

Trend of mental diseases.—About 40 percent of all the first admissions fall into the category of diseases of psychogenic origin (or without clearly defined tangible cause or structural change). Next in order of incidence are the diseases of the senium with 18 percent, followed by diseases associated with exogenous causes with 14.5 percent. About 13 percent of the first admissions to mental hospitals are diagnosed as without psychosis.

The first-admission rates in general show as much variability as the hospitalization rates. However, the diseases of the senium, which showed least variation in hospitalization rates, show highest variation in first-admission rates. On the other hand, the diseases of psychogenic origin, which showed relatively high variability in hospitalization rates show the lowest variability in first-admission rates. One possible explanation for these contrary trends is the tendency to regard most of the patients in the category of diseases of psychogenic origin

as acute emergency cases requiring immediate hospitalization. As a result there is less variation from region to region in the policy of admission with regard to these patients. This is not the case with patients in the category of diseases of the senium, where hospitalization is often not an urgent matter. This policy tends to stabilize the resident population, but tends to make the rate for new admissions less constant from region to region and from year to year. This explanation must be regarded as partial only, since the data for hospitalization rates deal only with State hospital patients.

Voluntary admissions.—Most of the first admissions to the State hospitals for mental disease are under judicial commitment; only a little more than 5 percent were admitted on a voluntary basis. The presence of many voluntary admissions is indicative of a rather favorable attitude on the part of the community toward its mental hospitals. In some States voluntary admissions are unfortunately not encouraged. The East North Central and Pacific States have the highest proportions of voluntary admissions, while the East South Central States have the lowest proportion.

The different types of hospitals do not draw their patients uniformly from all the disease categories. The Veterans' Administration facilities, since they are limited to veterans, draw their patients largely from the group between 40 and 55 years of age. The private hospitals because of their high fees tend to draw their patients from the well-to-do classes, while the city and county hospitals tend to receive the more manageable milder patients. The State hospitals because of their size and authorization by law are required to accept all types of patients. As a result some categories of diseases are found more often in some types of hospitals than in others. As a whole the group of diseases associated with exogenous causes are under-represented in the private hospitals and are over-represented in the county and city hospitals and in the Veterans' Administration facilities. However, psychoses associated with alcoholism and drug addiction which are grouped in this category of diseases are not similarly distributed but show an over-representation in private hospitals. Diseases of the senium, as would be expected, are under-represented in the Veterans' Administration facilities, and also in the private hospitals. Diseases of psychogenic origin (or without clearly defined tangible cause or structural change) account for more than their expected share of patients in private hospitals.

The proportion of first admissions in the younger age groups, below 50, is decreasing while the relative number above 50 years of age is increasing. The trend in the various regions is not identical. The greatest percentage decrease has occurred in New England and the least change has occurred in the South Atlantic region.

II. Movement of Patient Population

3. DISCHARGES

The final goal of the State hospital is to enable the patient to resume a productive, economically secure life in the community. The discharge rate of the hospital is, consequently, an important index of its efficiency. It is difficult, however, to obtain comparable discharge indexes for different hospitals because of their differing characteristics. The discharge rate is more an index of the type of patient received than of the type of care given. One way of circumventing this difficulty is to relate the discharges to the total number under treatment in each diagnostic category. On the basis of data provided in the Bureau of the Census report for 1933 on "Patients in Hospitals for Mental Disease," such a comparison was undertaken. There were 385,000 patients under treatment during 1933 who were diagnosed as with psychosis (including psychoneuroses). Of this number, 36,033, or 9.6 percent (93.5 per 1,000), were discharged. The data by major diagnostic groupings are shown in table 18 and figure 5 (p. 35).

TABLE 18.—*Discharges from State hospitals by major diagnostic groupings, 1933*

	Number under treatment	Number of discharges	Rate per 1,000 under treatment
Diseases associated with exogenous causes	37,801	5,563	147.2
Diseases of the senium	40,664	2,732	67.2
Diseases of psychogenic origin (or without clearly defined tangible cause or structural change)	241,906	22,271	92.1
Other diseases with psychosis	65,157	5,467	83.9
Total	385,528	36,033	93.5

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

Before proceeding with this analysis it is necessary to call attention to a possible misinterpretation of the discharge rates discussed in this section. These rates represent the ratio of discharged patients to number under treatment during the year. They throw no light on the question of the chances for recovery of a given group of patients during the course of their illness. The data for such follow-up studies must be obtained by direct investigation.

The diseases associated with exogenous causes (syphilis, alcoholism, and drug addiction) show the highest rates of discharge, with 147.2 discharged per 1,000 patients under treatment. The diseases of the senium show the lowest discharge rate with 67.2 discharges per 1,000 under treatment. The discharge rates for each specific diagnosis are shown in table 19.

TABLE 19.—*Rates of discharge from State hospitals by specific diagnosis, 1933 (rate per 1,000 persons under treatment)*

	Discharges		Rate per 1,000 under treatment	
I. Diseases associated with exogenous causes		5,563		147.2
Alcoholic psychosis		2,763		236.5
Psychoses with syphilis		2,442		96.7
With cerebral syphilis	545		112.5	
General paralysis [1]	1,897		93.0	
Due to drugs, etc		358		411.5
II. Diseases of the senium		2,732		67.2
With cerebral arteriosclerosis		1,774		85.0
Senile		958		48.4
III. Diseases of psychogenic origin (or without clearly defined tangible cause or structural change)		22,271		92.1
Functional psychoses		18,258		85.0
Dementia praecox	9,113		55.6	
Manic-depressive psychosis	9,145		179.3	
Paranoia or paranoid condition		657		57.4
Involutional melancholia		828		115.8
Psychoneuroses and neuroses		1,537		368.7
With psychopathic personality		991		230.9
IV. Other diseases with psychosis		5,467		83.9
With Huntington's chorea		30		47.2
With brain tumor		14		93.3
With other brain or nervous diseases		465		108.4
With pellagra		348		199.8
With other somatic diseases		854		198.8
Traumatic		215		160.6
Epileptic psychosis		909		76.0
With mental deficiency		1,307		63.9
Undiagnosed and unknown		1,325		65.3
Total		36,033		93.5

[1] Now designated as "General paresis."

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

The highest discharge rate in the category of diseases associated with exogenous causes is for drug addiction (with psychosis) with 411.5 discharges per 1,000 under treatment, nearly half of all the patients treated for this ailment. The lowest discharge rate was for general paralysis with 93 discharges per 1,000 under treatment.

For diseases of the senium the discharge rate was 67.2 per 1,000 under treatment.

Among diseases of psychogenic origin the discharge rate is high for manic-depressive psychosis. This is to be expected, considering the cyclic nature of the disease. The readmission rate for this disease is also proportionately high. Higher still among discharge rates for diseases of psychogenic origin are the rates for psychoneuroses and neuroses and for psychoses with psychopathic personality. The rates are 368.7 and 230.9, respectively, per 1,000 under treatment. The other psychoses in this category do not vary significantly from the total for the group, 92.1, with the exception of dementia praecox where the rate of discharge is low, only 55.6 per 1,000 under treatment.

For the other diseases with psychosis, those with the highest rates of discharge are disorders with pellagra or with other somatic diseases and those with the lowest rates of discharge are psychoses with Huntington's chorea, mental deficiency, and epilepsy.

The rate of discharge is not constant for each of the regions, and varies from 72.9 in the Mountain region to 149.4 in the East South Central region, the average for the country being 93.5 per 1,000 under treatment.

Diseases associated with exogenous causes.—For diseases associated with exogenous causes the rates vary from 134 in the New England and Middle Atlantic States to 247.4 in the East South Central region. A study of the individual psychoses which make up this category indicates that discharge rates of patients with alcoholic psychosis vary from 160.6 per 1,000 under treatment in New England to 510.4 in the East South Central region. Whether the high rates in the East South Central and South Atlantic regions are indicative of the fact that the hospitals in that part of the country are so overcrowded that patients are discharged when slightly improved or whether this condition is due to the absence of commitment laws for alcoholism in those States is unknown. Only half of the States provide by law for the commitment of the inebriate to the State hospital. In those States in which there is no such provision there is possibly a tendency to diagnose the alcoholic as psychotic and to treat him at the State hospital until he shows some improvement. The only other alternative for inebriates who are refused admission to State hospitals is care in a Federal hospital in the case of veterans, or treatment in some private institution.

For syphilitic psychoses, both cerebral syphilis and general paresis, the discharge rates range from 74.3 in New England to 176.3 in the East South Central region. Since the facilities for treatment of this disease are much better in New England than in the East South Central region, the high discharge rate in the latter region is difficult to explain, except on the probability that the latter region does not retain patients for so long a period of treatment as some other regions.

Psychoses due to drugs show a high discharge rate throughout.

Diseases of the senium.—For diseases of the senium the rates range from 43.5 per 1,000 under treatment in the Mountain region to 114.4 in the East South Central region. The East South Central region has predominantly higher rates of discharge for both cerebral arteriosclerosis and senile dementia, undoubtedly because overcrowding necessitates discharge of patients who can in any way be cared for at home, thereby making room for those patients more obviously in need of hospital care.

Diseases of psychogenic origin.—For diseases of psychogenic origin the range in discharge rates is from 80 per 1,000 under treatment in

the Mountain region to 113 in the West South Central region. The East South Central region shows an unusually high discharge rate of 223 per 1,000 under treatment.

By far the largest number of discharges in this group are of patients with functional psychoses. The rate of discharge for manic-depressive psychosis is more than three times as high as for dementia praecox in the United States. The range in rate of discharge for dementia praecox is from 39.9 per 1,000 under treatment in the Middle Atlantic States to 144.6 in the East South Central region. For manic-depressive psychosis the rates range from 136.4 in the West North Central region to 324.1 in the East South Central region.

Psychoneuroses, neuroses, and psychopathic personality show the highest rates of discharge throughout the country.

Other diseases with psychosis.—Other diseases with psychosis show a range of rates from 69.7 to 114.1 per 1,000 under treatment, with a total rate for the United States of 83.9.

The largest numbers of discharges are among those with mental deficiency, epilepsy, or with other somatic diseases. The rates of discharge are highest in psychoses with pellagra and with other somatic diseases. In northern regions there are no cases of pellagra in the State hospitals. In the South however this disease, apparently due to faulty diet, is very prevalent but responds readily to treatment.

The number of discharges and discharge rates for these diagnostic categories are shown in table 20.[10]

TABLE 20.—*Number of discharges and discharge rate per 1,000 under treatment from State hospitals for mental disease in the major diagnostic categories, by region, 1933*

Region	Diseases associated with exogenous causes		Diseases of the senium		Diseases of psychogenic origin [1]		Other diseases with psychosis		Total	
	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment
New England	543	134.4	344	81.0	2,001	79.5	590	114.1	3,478	90.0
Middle Atlantic	1,276	133.7	644	63.4	5,074	76.8	953	98.1	7,947	83.2
East North Central	1,417	145.4	549	68.1	4,388	90.4	942	103.6	7,296	96.7
West North Central	397	142.7	196	50.6	1,954	81.1	379	49.5	2,926	76.2
South Atlantic [2]	481	145.7	271	71.6	2,191	95.0	770	77.4	3,713	92.6
East South Central	412	247.4	218	114.4	2,057	222.9	676	69.7	3,363	149.5
West South Central	302	141.5	198	67.5	1,674	112.7	672	84.4	2,846	102.1
Mountain	123	146.4	52	43.5	463	79.7	83	40.6	721	72.9
Pacific	517	166.6	241	59.0	2,027	96.3	356	105.6	3,141	99.4
United States [3]	5,563	147.2	2,732	67.2	22,271	92.1	5,467	83.9	36,033	93.5

[1] Or without clearly defined tangible cause or structural change.
[2] Excludes the District of Columbia.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

[10] Rates for each diagnosis separately are given in tables N, O, P, Q, R, and S on pp. 83 to 85 of the appendix.

Variability in discharge rates.—The probability of being discharged from the hospital varies with the type of disease. But even within each type of disease the chances of being discharged are not constant from region to region. The variability in discharge rates from region to region is shown in table 21.

TABLE 21.—*Coefficients of variation of discharge rates from State hospitals for mental disease for the geographic regions, by major diagnostic categories*

	Diseases associated with exogenous causes	Diseases of the senium	Diseases of psychogenic origin [1]	Other diseases with psychosis	Total
Average [2] rate per 1,000 under treatment	147.2	67.4	91.8	83.8	93.3
Standard deviation	23.4	13.5	28.1	20.5	16.2
Coefficient of variation	15.9	20.0	30.6	24.5	17.4

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.

The greatest variation in discharge rates is found in the diseases of psychogenic origin (or without clearly defined tangible cause or structural change). The least variation is shown by diseases associated with exogenous causes and diseases of the senium. Apparently the policy with regard to discharge is more constant from region to region in the case of the last two named types of diseases.

SUMMARY

The diseases associated with exogenous causes have the highest discharge rate, nearly 15 percent of all patients under treatment being discharged in a given year. The diseases of the senium show the lowest discharge rate, about 7 percent. This low rate is primarily due to the heavy loss through mortality in the case of patients in this disease group. The discharge rate for diseases of psychogenic origin (or without clearly defined tangible cause or structural change) is 9 percent of the total number under treatment. Since the patients in this group of diseases form the vast majority of patients in the hospital, their low discharge rate tends to permit those patients to accumulate in the hospital.

The chances of being discharged show the least interregional variability for the diseases associated with exogenous causes and for diseases of the senium, and the highest variability for diseases of psychogenic origin (or without clearly defined tangible cause or structural change). The large variability in the case of the discharge rate for diseases of psychogenic origin apparently reflects the great interregional variation in the ability of patients in these categories to live outside of the hospital. It is well known that in rural areas even unrecovered dementia praecox patients may get along marginally in the community whereas in urban regions such an adjustment is impossible.

4. DEATHS

The death rate in a hospital is largely a function of the condition and age of its patients. Hospitals that admit predominantly old patients, and those that admit patients suffering from such highly fatal conditions as brain tumors or advanced stages of general paresis, will tend to have higher death rates than hospitals that admit younger and more physically fit patients.

Major categories of diagnosis.—The total death rate for all mental disorders in the United States is 70.2 per 1,000 under treatment. Of the four major categories the rate is highest for diseases of the senium, three and one-half times the total rate. Diseases associated with exogenous causes have the second highest rate, 112.4, one-half larger than the total rate. The rate for diseases of psychogenic origin is one-half the total rate while other diseases with psychosis closely approximate the total.

These data are shown in table 22 and figure 5.

The death rates for each of the diagnostic groups are not comparable among themselves since each disease is drawn from a different age span in the population. In order to make them comparable the death rates for each category were compared with the death rates in the corresponding age groups of the general population. The ratio of the patient death rate to the general death rate is shown in the last column of table 22.

TABLE 22.—*Deaths in State hospitals by major diagnostic groupings, 1933*

	Patients under treatment	Deaths	Death rate per 1,000 under treatment	Death rate per 100,000 in the comparable general population [1]	Ratio of patient death rate to general death rate
Diseases associated with exogenous causes	37,801	4,248	112.4	14.8	7.59
Diseases of the senium	40,664	10,239	251.8	47.9	5.26
Diseases of psychogenic origin [2]	241,906	8,394	34.7	14.1	2.46
Other diseases with psychosis	65,157	4,190	64.3	9.2	6.99
Total	385,528	27,071	70.2	8.9	7.89

[1] To obtain this rate, the death rate in the age span corresponding to each diagnosis was obtained. These ranges are the same as those utilized in the case of hospitalized patients.
[2] Or without clearly defined tangible cause or structural change.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933. Mortality Statistics, Bureau of the Census, U. S. Department of Commerce, 1935.

For all the mentally diseased patients the death rate is nearly eight times as high as for the general population. The diseases in which the death rates are most nearly like the comparable death rates in the general population are the disorders of psychogenic origin where the patient rate is only two and one-half times as high as the

corresponding general death rate. The highest ratio is shown by diseases associated with exogenous causes where the patient rate is nearly seven and one-half times as high as the general rate.[11]

For the individual diagnoses in the group of diseases associated with exogenous causes, alcoholic psychoses and diseases due to drugs show the smallest excess over the general death rates and syphilitic psychoses show the highest excess.

One-fourth of all patients under treatment for diseases of the senium fail to survive. This rate is more than five times as high as the death rate for the same age span in the general population.

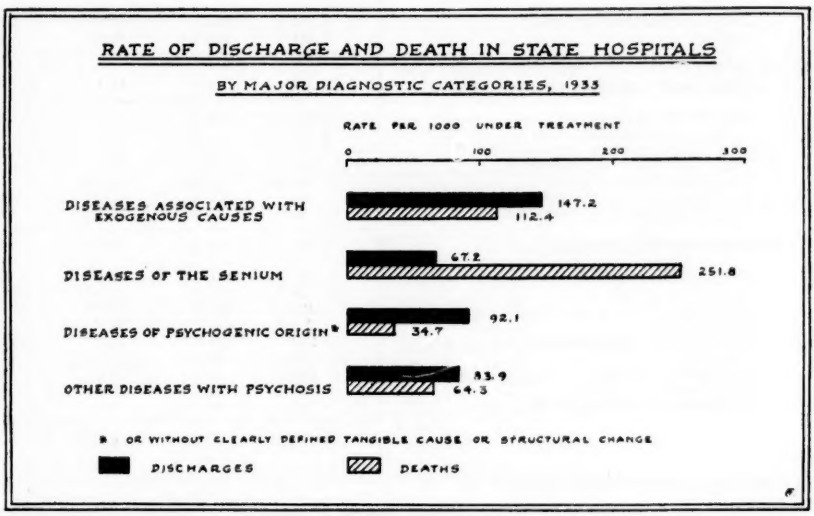

FIGURE 5.

Among diseases of psychogenic origin the ratio is lowest for paranoia or paranoid conditions and highest for manic-depressive psychosis.

The diseases that showed the highest excess in death rates were psychoses with brain tumor where more than 40 percent of the patients under treatment died.

The death rates for the various diagnosis groups, as compared with rates for the comparable general population, are given in table 23.

There is considerable interregional variation in the ratio of patient to general death rates. In the Mountain region this ratio is 6.6, while in the East South Central region it rises to 9.0. These variations appear upon inspection to be due to regional differences in patient death rates rather than to differences in death rates of the general population.

[11] It should be noted that the discrepancy between patient death rates and the corresponding death rates in the general population are somewhat smaller than they should be because patient deaths are counted in computing the general death rate.

TABLE 23.—*Death rates in State hospitals for mental disease by specific diagnosis and in the general population in the same age ranges, 1933*

	Deaths	Death rate per 1,000 under treatment	Death rate per 100,000 in the comparable general population	Ratio of patient death rate to general death rate
I. Diseases associated with exogenous causes	4,248	112.4	14.8	7.59
Alcoholic psychosis	379	49.6	16.9	2.93
Psychosis with syphilis	3,637	144.0	14.8	9.73
Cerebral syphilis	519	107.1	14.8	7.24
General paralysis [1]	3,118	152.8	12.8	11.94
Due to drugs, etc	32	36.8	17.2	2.14
II. Diseases of the senium	10,239	251.8	47.9	5.26
With cerebral arteriosclerosis	5,184	248.5	44.8	5.55
Senile	5,055	255.3	46.8	5.46
III. Diseases of psychogenic origin (or without clearly defined tangible cause or structural change)	8,394	34.7	14.1	2.46
Functional psychoses	7,208	33.5	13.0	2.58
Dementia praecox	4,633	28.3	11.3	2.50
Manic-depressive psychosis	2,575	50.5	13.0	3.88
Paranoia or paranoid condition	415	36.2	18.9	1.92
Involutional melancholia	576	80.6	29.6	2.72
Psychoneuroses and neuroses	105	25.2	11.3	2.23
With psychopathic personality	90	21.0	10.1	2.08
IV. Other diseases with psychosis	4,190	64.3	9.2	6.99
With Huntington's chorea	92	144.7	9.0	16.08
With brain tumor	61	406.7	12.3	33.07
With other brain or nervous diseases	450	104.9	9.0	11.66
With pellagra	225	129.2	11.3	11.43
With other somatic diseases	879	204.6	11.3	18.11
Traumatic	66	49.3	11.6	4.25
Epileptic psychosis	860	71.9	10.1	7.12
With mental deficiency	711	34.7	10.1	3.44
Undiagnosed and unknown	846	41.7	5.9	7.07
Total	27,071	70.2	8.9	7.89

[1] Now designated as "General paresis."

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933. Mortality Statistics, Bureau of the Census, U. S. Department of Commerce, 1935.

Diseases associated with exogenous causes.—The patient-general death rate ratio for diseases associated with exogenous causes is highest in the southern States (East and West South Central) and lowest in the New England and Middle Atlantic States. For one group of diseases in this category, the syphilitic psychoses, the ratio varies from 13.2 in the East South Central region to 9.6 in the Mountain region.

Diseases of the senium.—For diseases of the senium the patient death rate varies from 4.7 times the general death rate in the Pacific region to 6.1 times that rate in New England. No differentiation was found to exist between the two diagnoses in this category—senile dementia and psychoses with cerebral arteriosclerosis. The higher ratio in New England may be due to more complete hospitalization of the aged.

Diseases of psychogenic origin.—As a group, diseases of psychogenic origin have a lower death rate than other mental disorders. The ratio of patient to general death rate for the United States is 2.46

and does not vary appreciably except for the East South Central region where the ratio is 4.32. The high ratio in the East South Central region is due to the high death rate for the functional psychoses and for involutional melancholia.

For disorders with psychopathic personality the ratios range from 0.92 in the East South Central region to 4.97 in the New England region, with a total for the country of 2.08. Whether this is due to possible difference in diagnosis of patients in the hospital or to more complete hospitalization of these disorders in New England is open to question. The fact that the East South Central region has the highest discharge rate for this psychosis precludes a large death rate in that region.

TABLE 24.—*Ratio of death rates of all patients in State hospitals for mental disease to corresponding age-specific death rates in the general population, by major diagnostic categories by region, 1933*

Region	Diseases associated with exogenous causes	Diseases of the senium	Diseases of psychogenic origin[1]	Other diseases with psychosis	Total
New England	5.73	6.05	2.22	8.46	7.86
Middle Atlantic	6.20	5.00	2.30	7.58	7.47
East North Central	7.47	5.05	2.25	8.87	7.74
West North Central	8.63	5.99	2.78	5.01	7.76
South Atlantic[2]	8.67	5.12	2.58	7.79	8.48
East South Central	11.28	5.90	4.32	4.54	9.02
West South Central	10.77	4.95	2.84	7.28	8.59
Mountain	8.28	5.38	2.32	5.74	6.63
Pacific	8.72	4.74	2.36	7.48	7.24
United States[3]	7.59	5.26	2.46	6.99	7.89

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933. Mortality Statistics, Bureau of the Census, U. S. Department of Commerce, 1935.

Other diseases with psychosis.—In the category of other diseases with psychosis, the highest death rates occur in psychoses with mental deficiency, epilepsy, and with other somatic diseases. The ratios of patient to general population death rates, however, are highest for psychoses with brain tumor and with other somatic diseases, 33.07 and 18.11, respectively, for the country as a whole. The ratios for all disorders in this category combined range uniformly from 4.54 in the East South Central region to 8.46 in New England with the total for the country midway between. These data are given in table 24.[12]

Variation in death rates.—The variability in the ratio of patient death rate to general death rate is shown in table 25.

[12] Rates for each diagnosis separately are given in tables T, U, V, and W on pp. 85 to 86 of the appendix.

TABLE 25.—*Coefficient of variation for ratios of patient death rates to corresponding general death rates in the geographic regions by major diagnostic categories*

	Diseases associated with exogenous causes	Diseases of the senium	Diseases of psychogenic origin[1]	Other diseases with psychosis	Total
Ratio [2] of patient to general death rate	7.63	5.25	2.47	7.00	7.83
Standard deviation	1.54	.46	.45	1.52	.55
Coefficient of variation	20.18	8.76	18.22	21.71	7.02

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.

The least variation is shown by diseases of the senium. In the other categories the variation is nearly two and one-half times as high. Apparently the death rate in the diseases of the senium does not vary much from region to region when correction is made for the variability in the corresponding general death rate. In the case of the other diseases there is less correspondence between the regional death rates even after the correction for the general death rate of the region is introduced.

SUMMARY

Death rates of patients with mental disease are highest for diseases of the senium where 1 out of every 4 patients under treatment succumbs. The death rate is lowest for diseases of psychogenic origin where death occurs in 1 out of 30 patients under treatment.

For diseases associated with exogenous causes the excess of patient death rate over the death rate in the general population for the entire country is greater than in any of the other diagnostic categories. The interregional variability with regard to this ratio is also quite high, indicating that the regions differ considerably in the type of patient they admit in this category and in the type of care afforded.

5. REMOVALS

Discharges and deaths, which constitute the outflow of patients from the hospital, have already been separately analyzed. The total removal rate of the hospital will now be investigated. This rate gives some indication of the mobility of the hospital population. The removal rate for the entire country for all types of mental disorders was 160 per 1,000 under treatment. That is, of every 1,000 patients under treatment in the course of the year, 160 are either discharged or die and 840 remain in the hospital.

Major categories of diagnosis.—The removal rate varies with the diagnosis. The highest removal rate, 320 per 1,000 under treatment, is found for diseases of the senium where, as would be expected, deaths account largely for the high removal rate. Nearly one-third of all the patients in this diagnostic group are removed from the hospital in the

course of the year. The diseases associated with exogenous causes have the next highest rate, with 260 per 1,000 under treatment being removed from the hospital in the course of the year. In the case of these diseases the large number of discharges from the alcoholic and drug addict group tends to raise the rate of removal. Diseases of psychogenic origin, or without clearly defined tangible cause or structural change, have the lowest removal rate, 130 per 1,000 under treatment. In the case of these diseases the relatively low discharge rate combined with the relatively low death rate tends to keep the retention rate at a high level. Most of these patients are comparatively young on admission and the length of their hospital life is on the average 17 years. The patients in this group constitute nearly two-thirds of the total patient population. Since their retention rate is so high, more beds must be provided annually in all hospitals to keep up with the increase in their numbers. If any method can be found for increasing the rate of recovery for this group of diseases, it will not only redound to the benefit of thousands of patients but will remove the necessity for the ever-expanding building program required at the present time.

The interregional variation in the rate of removal as well as the rate for the entire country by major diagnostic categories is shown in table 26 [13] and figure 5.

TABLE 26.—*Deaths and discharges and rate per 1,000 under treatment in State hospitals for mental disease in the major diagnostic categories, by region, 1933*

Region	Diseases associated with exogenous causes		Diseases of the senium		Diseases of psychogenic origin [1]		Other diseases with psychosis		Total	
	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment
New England	890	220.3	1,582	372.4	2,826	112.3	1,006	194.5	6,304	163.2
Middle Atlantic	2,193	229.8	3,255	320.6	7,261	109.8	1,660	170.9	14,369	150.4
East North Central	2,464	252.9	2,532	314.2	5,925	122.1	1,684	185.1	12,605	167.2
West North Central	704	253.1	1,211	312.8	2,825	117.3	690	90.2	5,430	141.4
South Atlantic [2]	953	288.7	1,215	320.8	3,083	133.7	1,522	153.0	6,773	168.9
East South Central	690	414.4	727	381.6	2,603	282.1	1,068	110.1	5,088	226.2
West South Central	617	289.0	831	283.4	2,193	147.6	1,147	144.1	4,788	171.7
Mountain	228	271.4	357	298.5	660	113.7	197	96.3	1,442	145.8
Pacific	912	293.9	1,159	283.5	2,757	131.0	603	178.8	5,431	171.8
United States [3]	9,811	259.5	12,971	319.0	30,665	126.8	9,657	148.2	63,104	163.7

[1] Or without clearly defined tangible cause or structural change.
[2] Excludes the District of Cloumbia.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

The total removal rate varies from 141 per 1,000 under treatment in the West North Central region to 226 in the East South Central region. That is, more than one-fifth of the patients under treatment

[13] Rates for each diagnosis separately are given in tables X, Y, Z, AA, BB, CC, on pp. 87 to 89.

in the course of a year are removed by either death or discharge in the East South Central region as compared with one-seventh in the West North Central region.

The different diagnostic categories show rather wide interregional variation. One of the widest ranges occurs in dementia praecox, where the rate per 1,000 under treatment varies from 67.4 in the Middle Atlantic States to 196.1 in the East South Central region. The range is small for the category of senile dementia, with a range of from 277.4 per 1,000 under treatment in the Pacific States to 362.3 in the East South Central States. Other diagnoses that show comparatively small range in rates are epileptic psychoses and psychoses associated with syphilis. This uniformity among the regions in removal rates of patients with various psychoses results to a large extent from considerable homogeneity in the death rates for those diagnoses. The discharge rates consistently show a wider variation than the death rates so that their effect produces a greater unevenness among the rates of removal than would otherwise be the case.

Variability in the removal rate.—The coefficients of variation for the removal rate of patients are shown in table 27.

TABLE 27.—*Coefficients of variation of removal rates from State hospitals for mental disease for the geographic regions by major diagnostic categories*

	Diseases associated with exogenous causes	Diseases of the senium	Diseases of psychogenic origin [1]	Other diseases with psychosis	Total
Average rate per 1,000 under treatment [2]	259.8	319.8	126.7	148.1	163.8
Standard deviation	41.1	27.2	32.9	34.7	18.6
Coefficient of variation	15.8	8.5	25.9	23.4	11.4

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.

The diseases of the senium show the least variation in the removal rate while the diseases of psychogenic origin show the highest variation in this rate. Apparently the removal rate of the old age psychoses is least affected by interregional variation in policy of discharge and in mortality. This is to be expected since the death rates in this group are relatively constant and a relatively small number of patients is discharged.

SUMMARY

Of the total number of patients under treatment 16 percent are either discharged or die in the course of the year. The highest removal rate occurs in diseases of the senium; about 32 percent of the patients in this category are separated from the hospital in the course of the year. In the case of diseases associated with exogenous causes 26 percent of the patients leave the hospital in the course of the year. The lowest removal rate is found for diseases of psychogenic origin. Only 13 percent of the patients in this category are removed from the

hospital in the course of the year. Thus, the loss of patients in the course of one year is one-fourth of the total for diseases associated with exogenous causes, about one-third of the total for diseases of the senium and about one-eighth of the total for diseases of psychogenic origin.

6. TURN-OVER AND REPLACEMENT OF PATIENTS

Turn-over of patient population.—The vast majority of patients in mental hospitals are long-term patients, their average length of stay being approximately 4 to 5 years in such States as New York and Massachusetts. In the country as a whole no data for length of stay are available. However by relating the first admissions to the resident population there may be determined the proportion of patients who are new to the hospital and whose length of residence to the day of the census is less than a year. Some estimate may also be obtained of the relative size of inflow and outflow of patients by relating the total number of admissions to the total number of removals (discharges and deaths).

For the country as a whole about one-fourth of the patients are first admissions of less than one year's residence. This proportion varies from 15 percent in New England to 25 percent in the East South Central region, the average for the country being 24 percent. Apparently the turn-over in patients is more rapid in the southern States than in the northern States.

Diseases of the senium.—An analysis of the major diagnostic groups indicates that the largest turn-over occurs in diseases of the senium, where nearly half of all the patients were first admissions of less than 1 year's standing. This large turn-over is partly due to the rather high death rate because of advanced age. The turn-over varies from 38 percent in the Mountain region to 59 percent in the East South Central region.

Diseases associated with exogenous causes.—For diseases associated with exogenous causes the turn-over ratio is 38 percent. Here again the southern States generally show a much higher turn-over than the northern States. This is especially true in the case of alcoholic psychoses. The high turn-over in this category is indicated by the high admission and discharge rates. The short stay of these patients is indicated by the fact that there were one and one-third times as many first admissions during the year as there were patients in the hospital at the end of the year.

Diseases of psychogenic origin.—The smallest turn-over ratio is shown by diseases of psychogenic origin, only 13 percent of all the patients in this category being first admissions of less than one year's standing. The turn-over in the northern States is generally lower than in the southern States.

An analysis of the individual diagnoses indicates that the lowest turn-over ratio is shown by dementia praecox. For the country as a whole only 9 percent of all the patients were first admissions of less than one year's standing. In the southern States again the proportion was higher. The highest turn-over is shown by the category psychoneuroses and neuroses where the ratio is 63 percent, followed by the categories of psychopathic personality with 29 percent, involutional melancholia with 24 percent, and manic-depressive psychoses with 23 percent turn-over.

These data are shown in table 28.[14]

TABLE 28.—*Ratio of first admissions to hospitalized patients in State hospitals for mental disease by major diagnostic categories, by region, 1933 (expressed as percentage)*

Region	Diseases associated with exogenous causes	Diseases of the senium	Diseases of psychogenic origin [1]	Other diseases with psychosis	Grand total
New England	24.1	54.8	7.5	21.1	14.8
Middle Atlantic	36.6	55.8	12.4	23.6	19.4
East North Central	35.7	49.0	11.9	27.9	22.4
West North Central	38.9	48.7	13.6	12.0	17.7
South Atlantic [2]	48.2	48.2	14.7	20.1	21.0
East South Central	61.3	58.9	29.7	12.8	25.1
West South Central	50.9	46.2	17.6	19.8	23.0
Mountain	32.5	38.7	12.2	11.5	16.2
Pacific	46.7	47.3	14.4	28.2	22.3
United States [3]	38.4	50.8	13.1	19.7	19.7

[1] Or without clearly defined tangible cause or structural change.
[2] Excludes the District of Columbia.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

Replacement of patient population.—During 1933 some 36,000 patients were discharged from State hospitals and 27,000 died, or a total of 63,000 patients were removed from these hospitals. To replace the removals, some 63,500 patients were admitted for the first time and an additional 15,500 were admitted who had previously been in a mental hospital. Thus, for every 100 patients who were removed, 101 first admissions and 25 readmissions came to take their places.

This ratio of admissions to removals (discharges and deaths) is the replacement rate. Where the replacement rate exceeds 100, the admissions exceed the removals, and when the rate falls below 100, the removals exceed the admissions. The excess of admissions over removals cannot be taken as an index of the net increase in the resident population of the hospital, since some of the patients admitted during the year are discharged within the course of the same year. Furthermore, not all the removals from the hospital are resident in the hospital, since nearly two-thirds of the discharges are from parole. The

[14] Ratios for each diagnosis separately are given in tables DD, EE, FF, GG, on pp. 89 to 90.

replacement rate is the ratio of the influx to the outgo of patients and is not an index of the net increase in the patient population. The best estimate of the net increase is obtained by relating the net increase from the beginning of one year to the beginning of the next to the total number of resident patients at the beginning of the year. For the year 1933 the net increase for all the State hospitals of the country was 30 per 1,000 in residence.

Table 29 [15] shows the replacement rate by diagnosis for 1933, the most recent year for which data are available.

TABLE 29.—*Ratio of total admissions to discharges and deaths of patients in State hospitals for mental disease by major diagnostic categories, by region, 1933 (expressed as percentage)*

Region	Diseases associated with exogenous causes	Diseases of the senium	Diseases of psychogenic origin [1]	Other diseases with psychosis	Grand total
New England	110.9	101.2	111.7	130.3	111.9
Middle Atlantic	138.3	126.4	140.1	136.1	136.2
East North Central	118.6	115.1	121.7	148.0	123.3
West North Central	126.4	113.3	130.6	138.8	127.2
South Atlantic [2]	131.8	108.3	129.3	125.7	125.1
East South Central	95.9	102.9	130.0	121.2	105.8
West South Central	139.9	122.7	136.2	136.3	134.3
Mountain	105.3	98.0	125.5	130.5	116.2
Pacific	123.9	129.0	128.3	158.5	131.0
United States [3]	123.8	116.2	126.3	135.9	125.3

[1] Or without clearly defined tangible cause or structural change.
[2] Excludes the District of Columbia.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

The replacement rate for all diseases is 125.3. That is, the admissions exceed the removals to the extent of 25 percent of the removals. The greatest excess of admissions over removals is found for "other diseases with psychosis" and the least excess for diseases of the senium.

Only two of the individual diagnoses failed to replace themselves entirely during 1933, psychoses with brain tumor, where the replacement rate is 87, and psychoses with pellagra, where the rate is 91.

There are wide interregional variations in replacement rates for any one disease. The regions with high replacement rates for all diseases are the Pacific and Middle Atlantic regions, while the lowest replacement rates are found in the East South Central region.

The coefficients of variation for the regional rates for each major group of diagnoses are shown in table 30.

It will be noted that no marked differences exist in interregional variation between diseases in replacement rates. The replacement rate for all patients shows the highest interregional variation, while the replacement rate for "other diseases" shows the least interregional variation.

[15] Ratios for each diagnosis separately are given in tables HH, II, JJ, KK, on pp. 91 to 92.

TABLE 30.—*Coefficients of variation for replacement rates in State hospitals for mental disease in the geographic regions by major diagnostic categories*

	Diseases associated with exogenous causes	Diseases of the senium	Diseases of psychogenic origin [1]	Other diseases with psychosis	Total
Ratio [2] of total admissions to discharges and deaths	124.2	116.0	126.9	135.8	125.6
Standard deviation	12.1	10.0	11.5	9.9	12.6
Coefficient of variation	9.8	8.6	9.1	7.3	10.0

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.

SUMMARY

About one-fourth of all the patients in residence at the end of the year are new admissions of less than one year's standing. Diseases of the senium have the highest proportion of new patients, while diseases of psychogenic origin have the lowest proportion.

The ratio of influx to outgo of patients in all the State hospitals is 125 to 100. The net excess of resident patients at the end of the year over the number at the beginning of the year is 30 per 1,000 in residence.

The ratio of influx to outgo of patients varies considerably from one disease group to another. It is lowest for diseases of the senium and highest for other diseases with psychosis. The interregional variation for each of the disease groups is more constant for the replacement rate than for any of the other rates.

III. Hospital Administration and Expenditures

7. ADEQUACY OF HOSPITAL FACILITIES

The number of mental hospitals by type and by region is shown in table 31.

TABLE 31.—*Number of hospitals for mental disease, by class of hospital and region, 1936*

Region	State		Veterans' Administration facilities		County		City		Private		State psychopathic		Total number of hospitals
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
New England	22	44.9	2	4.1	.....	.....	.....	.....	24	49.0	1	2.0	49
Middle Atlantic	32	29.6	4	3.7	16	14.8	4	3.7	50	46.3	2	1.9	108
East North Central	35	29.7	5	4.2	35	29.7	2	1.7	39	33.1	2	1.7	118
West North Central	24	50.0	2	4.2	2	4.2	1	2.1	18	37.5	1	2.1	48
South Atlantic	[1] 20	46.5	3	7.0	.....	.....	1	2.3	19	44.2	.....	.....	43
East South Central	10	40.0	3	12.0	4	16.0	.....	.....	8	32.0	.....	.....	25
West South Central	12	52.2	2	8.7	.....	.....	1	4.3	7	30.4	1	4.3	23
Mountain	9	56.3	2	12.5	.....	.....	.....	.....	4	25.0	1	6.3	16
Pacific	[1] 12	26.7	2	4.4	1	2.2	.....	.....	30	66.7	.....	.....	45
United States	[1] 176	37.1	25	5.3	58	12.2	9	1.9	199	41.9	8	1.7	475

[1] Includes one Federal hospital, St. Elizabeths in the District of Columbia, and Morningside Hospital, Oregon, a privately controlled hospital caring for Federal patients.

Source: Data received from Dr. Leon E. Truesdell corresponding with data published in Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1936.

In the country as a whole, private hospitals comprise about half the total number of mental hospitals. Next in order of frequency are the State hospitals, accounting for about one-third of the total. But from the point of view of the number of patients cared for the State hospital is most important, since more than 80 percent of all the patients are cared for by these institutions.

The State, county, and city hospitals constitute from 40 to 60 percent of the total except in the Pacific and South Atlantic regions where the proportion is much lower. For the country as a whole, this group constitutes only 52.9 percent of all mental hospitals, but hospitalizes 97 percent of all patients with mental disease.

The proportion of hospitals in the various categories varies considerably from region to region. The proportion of private hospitals is highest in the Pacific States and lowest in the Mountain States.

The adequacy of the care of mental patients is not measured by the number of hospitals but by the adequacy of their provisions for such care. The minimal requirements for proper hospitalization are decent living quarters and sufficient accommodations for comfort. There are no generally accepted standards for space per patient but the standards for several selected States are shown in table 32.

The data in table 32 are based on questionnaire returns from selected States. The space data are presented separately for patients on the general wards and for patients in single rooms. For bedrooms the average floor space per patient is 50.4 square feet; for day rooms, 37.0 square feet, and for dining rooms, 14.3 square feet, a total of 101.7 square feet per patient. For patients in single rooms the average floor-space allotment is 85 square feet.

TABLE 32.—*Square feet of space per patient in certain selected States, 1937* [1]

	For patients on general wards				For patients in single rooms
	Dormitory	Day room	Dining room	Total	
New York	43	30	15	88	70
Pennsylvania	50	50	15	115	80
Massachusetts	50	30	12	92	100
New Jersey	55	45	15	115	95
Maine	50	50	15	115	80
South Carolina	50	19	15	84	95
Veterans' Administration facilities [2]	55	35	13	103	75
Average	50.4	37.0	14.3	101.7	85

[1] In many States, however, the standards in effect are much below these.
[2] Acute, continued treatment, and parole patients only.

Table 33 gives the degree of overcrowding for State hospitals, computed from estimates made by superintendents of their own hospitals.

TABLE 33.—*Reported overcrowding in State mental hospitals, 1936*

Percent of overcrowding	Hospitals	
	Number	Percent
0	51	29.3
1–14	55	31.6
15–29	36	20.7
30–49	20	11.5
[1] 50	4	2.3
[2]	8	4.6
	[3] 174	100.0

[1] 50 and more.
[2] Not reported.
[3] This total does not correspond exactly with that given in table 24 because these data are for the end of 1936.

Source: Hospital number of the Journal of the American Medical Association, Mar. 27, 1937.

In some of the better institutions a daily census which does not exceed the rated capacity by more than 15 percent may not be serious, but there are evidently 60 institutions in which the patients exceed the capacity by more than 15 percent. It should be borne in mind that these degrees of overcrowding are based on estimates of rated capacity and not on direct measurements.

The average daily resident patient population of the State hospitals in 1935 was 347,620. The total rated capacity of all State hospitals of the country amounted to 312,158. Apparently there was an excess of 35,462 patients for whom no proper accommodations were available. This represents an overcrowding of 11.4 percent. But this overcrowding did not obtain uniformly throughout the Nation. The regional differences in overcrowding are shown in table 34.

TABLE 34.—*Overcrowding in State hospitals for mental disease, by region, 1935*

Region	Average daily resident patient population	Rated capacity	Excess	
			Number	Percent
New England	32,740	28,314	4,426	15.6
Middle Atlantic	86,136	77,102	9,034	11.7
East North Central	67,603	63,637	3,966	6.2
West North Central	34,830	30,850	3,980	12.9
South Atlantic [1]	37,146	34,258	2,888	8.4
East South Central	19,162	17,295	1,867	10.8
West South Central	26,853	24,164	2,689	11.1
Mountain	9,448	8,773	675	7.7
Pacific	28,639	23,165	5,474	23.6
United States [2]	347,620	312,158	35,462	11.4

[1] Excludes the District of Columbia.
[2] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

The region with the highest degree of overcrowding is the Pacific region with 23.6 percent. The region with the lowest degree of overcrowding is the East North Central region with 6.2 percent. In the very well developed regions, such as New England and the Middle Atlantic States, the overcrowding was 15.6 and 11.7 percent, respectively. It is difficult to assign any specific meaning to the degree of overcrowding in the various regions when such flagrant discrepancies exist. It is quite possible that these discrepancies are due to inefficient estimates of rated capacity rather than to real differences in overcrowding. If proper measures of rated capacity had been available, it is not unlikely that regions like the South Atlantic and Mountain regions, which are generally low in their facilities for care of mental disease, would yield a much higher degree of overcrowding than the figures seem to indicate.

SUMMARY

In order to estimate the adequacy of facilities for mental patients, accurate measures of the rated capacity of the hospitals in the various regions should be available. Unfortunately there are no such records at the present time. On the basis of the data on hand the region with the highest degree of overcrowding appears to be the Pacific region, which is overcrowded to the extent of one-fourth of its capacity. The New England and Middle Atlantic States show an overcrowding of from 11 to 15 percent. In some of the other regions where the degree of overcrowding is even smaller the rated capacity is undoubtedly overestimated.

8. CARE OF MENTAL PATIENTS

The vast majority of patients with mental disease are treated in State hospitals. Hence, the problem of care of mental disease is primarily a State problem, and an evaluation of the adequacy of care in the State institutions is a good index of the State's attitude toward its mentally ill. It would have been desirable to present similar analyses for county and city hospitals, Veterans' Administration facilities, and private hospitals, but unfortunately data for these institutions are not available.

A. MEDICAL PERSONNEL

The first essential step in efficient treatment is the provision of an adequate medical staff, beginning with the superintendent and ending with the interne.

There were 1,542 physicians in the State hospitals of the country in 1935. Their distribution by region and their average patient load is shown in table 35 and figure 6.

TABLE 35.—*Ratio of patients to assistant physicians in State hospitals for mental disease, by region, 1935*

Region	Average daily resident patient population	Physicians	Superintendents	Assistant physicians	Ratio of patients to assistant physicians	Standard patient ratio	Excess patient ratio		Deficit in assistant physicians
							Number	Percent	
New England	32,740	201	19	169	193.7	25,350	7,390	29.2	49
Middle Atlantic	86,136	497	31	457	188.5	68,550	17,586	25.7	117
East North Central	67,603	269	33	230	293.9	34,500	33,103	100.0	221
West North Central	34,742	121	22	95	365.7	14,250	20,492	143.8	137
South Atlantic [1]	37,146	129	19	108	343.9	16,200	20,946	129.3	140
East South Central	19,162	51	8	43	445.6	6,450	12,712	197.1	85
West South Central	26,853	88	12	76	353.3	11,400	15,453	135.6	103
Mountain [2]	9,448	33	9	27	349.9	4,050	5,398	133.3	36
Pacific	28,639	106	12	94	304.7	14,100	14,539	103.1	97
United States [3]	347,532	1,542	166	1,344	258.6	201,600	145,932	72.4	973

[1] Excludes the District of Columbia.
[2] There was only 1 physician, the superintendent, in each of the State hospitals of Idaho and of Nevada. He has therefore been listed in both the "Superintendent" and "Physician" columns.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

The average ratio of patients to assistant physicians (not counting superintendents) in the entire country was 258.6 in 1935. According to the standard set up by the American Psychiatric Association in 1926, the maximal load per physician should be 150 patients. Thus the average physician is overloaded 72 percent. This overloading varies considerably from region to region.

The ratio per assistant physician is heaviest in the East South Central region, with 445.6 patients to each assistant physician, and lightest in the Middle Atlantic and New England States. It is interesting to note that not a single region lives up to the standard set up by the American Psychiatric Association, although a few individual hospitals even improve upon this standard.

The degree of overloading of the medical staff varies from 26 percent in the New England and Middle Atlantic regions to 197 percent in the East South Central region.

Summarizing the situation with regard to the number of assistant physicians, it is apparent that there is a deficit of 973 physicians in the State hospitals. This number of physicians is needed to fill the present immediate shortage. To take care of the expanding needs of the underprivileged sections of the country, the total number of physicians required would be 2,985 and the shortage of physicians would increase to 1,525. This number is based on the conservative estimate of an incidence of 350 patients per 100,000 in the total popu-

lation of 128,024,000 in 1936. If the estimate were based on a hospitalization rate of 400 per 100,000 the total number of physicians needed would be 3,400, or more than twice the present number.

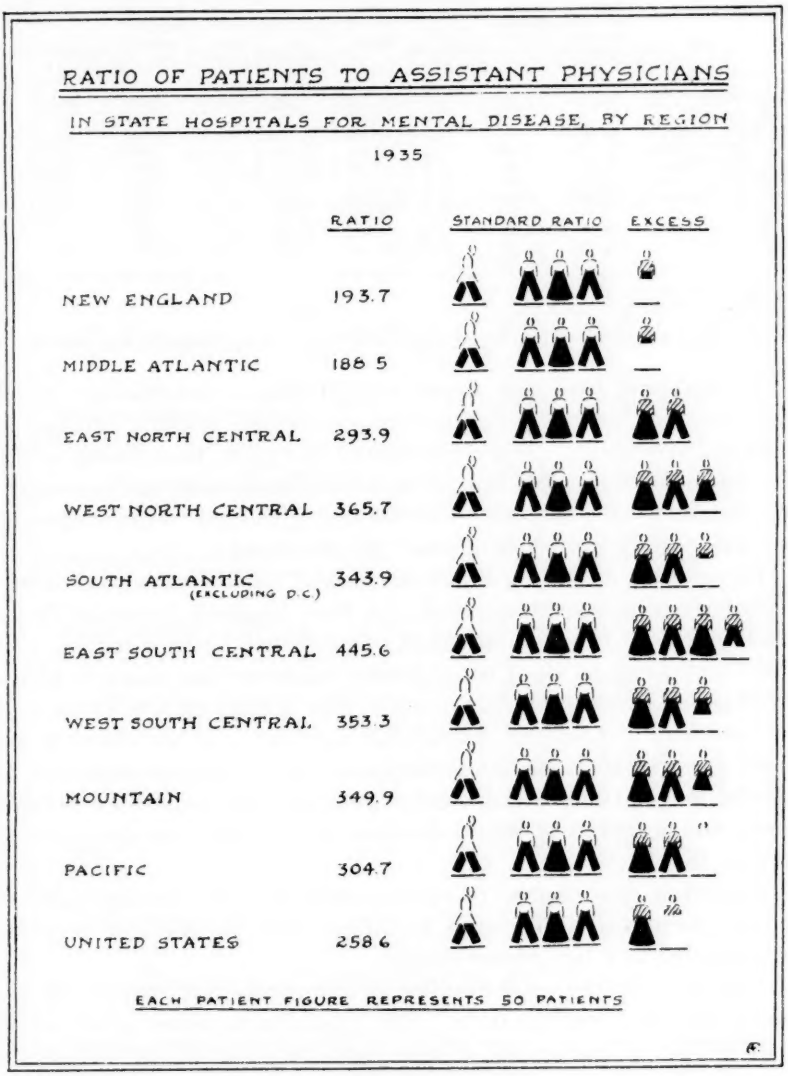

FIGURE 6.

B. NURSING PERSONNEL

The nursing personnel is the backbone of the therapeutic service. The number of nurses and attendants and their average patient ratios are shown in table 36 and figures 7 and 8.

TABLE 36.—*Ratio of patients to nurses and attendants in State hospitals for mental disease, by region, 1935*

Region	Average daily resident patient population	Nurses and attendants	Ratio of patients to nurses and attendants	Standard patient ratio	Excess		Deficit in nursing personnel	Graduate nurses	
					Number of patients	Ratio (percent)		Number	Percent
New England	32,740	4,349	7.5	34,792	−2,052	−5.9		614	14.1
Middle Atlantic	86,136	9,804	8.8	78,432	7,704	9.8	963	1,594	16.3
East North Central	67,603	5,901	11.5	47,208	20,395	43.2	2,549	541	9.2
West North Central	34,742	2,608	13.3	20,864	13,878	66.5	1,735	334	12.8
South Atlantic [1]	37,146	2,804	13.2	22,432	14,714	65.6	1,839	265	9.5
East South Central	19,162	1,386	13.8	11,088	8,074	72.8	1,009	58	4.2
West South Central	26,853	2,034	13.2	16,272	10,581	65.0	1,323	55	2.7
Mountain	9,448	772	12.2	6,176	3,272	53.0	409	44	5.7
Pacific	28,639	2,268	12.6	18,144	10,495	57.8	1,312	78	3.4
United States [2]	347,532	32,865	10.6	262,920	84,612	32.2	10,577	3,630	11.0

[1] Excludes the District of Columbia.
[2] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

The maximal load per nurse and attendant established by the American Psychiatric Association is an average of eight patients per nurse and attendant. When considered by region, the nursing service, like the medical service, fails to meet the ideal minimal standard of the American Psychiatric Association, although some individual hospitals satisfy and even exceed the standard.

The number of patients per nurse and attendant varies from 6 percent less than the standard in the New England region to 73 percent in excess of the standard in the East South Central region. The total overloading in the United States indicates that there is need of 10,500 more nurses and attendants if the minimum requirements of the American Psychiatric Association are met. If the country as a whole were to increase its facilities so as to provide care for 350 patients per 100,000 of the total population, the required number of nurses and attendants would become 55,600 and the deficit would increase to 22,700.

Comparing the degree of overloading on the nursing and the medical personnel, it becomes apparent that the medical personnel is overloaded to a far greater extent.

Thus far, only the total number of the nurses and attendants have been taken into consideration. But the total number is not always an indication of the extent of care given to patients, for the number of nursing hours per nurse and attendant varies from region to region. For the more progressive States, where three shifts of nursing personnel were recently instituted, the data presented are quite inadequate but unfortunately no more adequate data are available.

The 8-hour shift makes necessary a complete revision of the method of calculating patient loads on the nursing personnel. It would be more desirable to compute nursing hours per patient than ratio of patients to nurse and attendant.

Furthermore, mere numbers are no indication of quality. One indication of the quality of the nursing service is evidenced by the

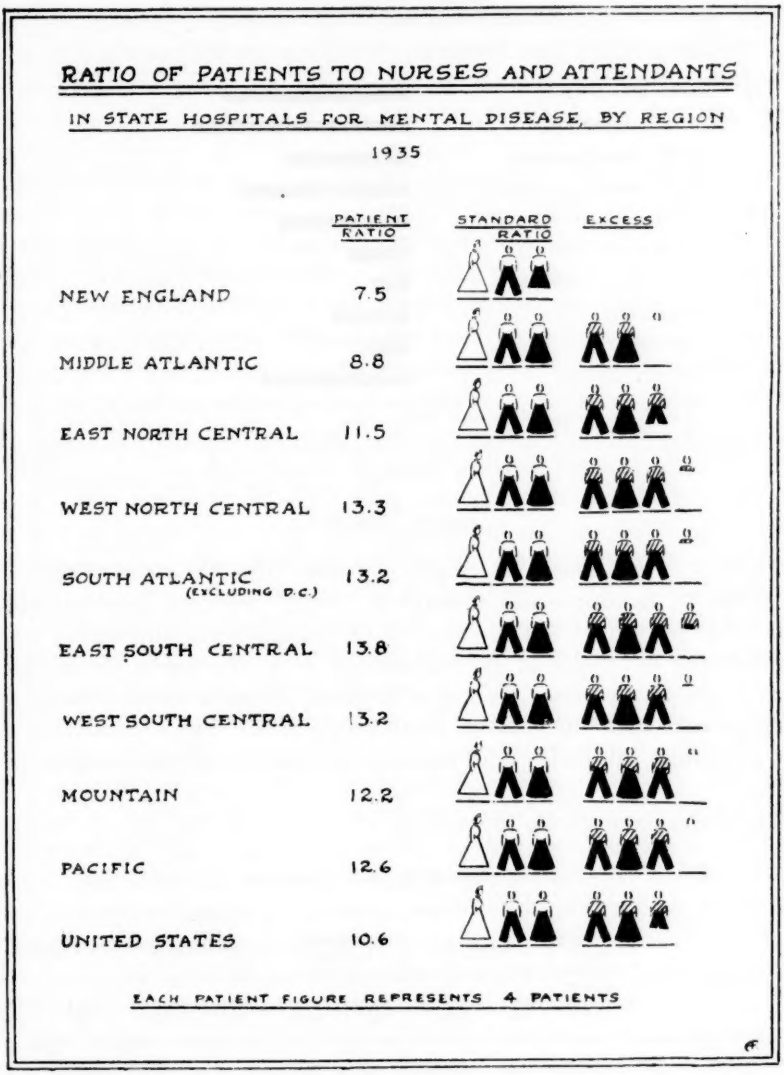

FIGURE 7.

number of graduate nurses and the percentage that they constitute of the total nursing staff.

The region with the highest proportion of graduate nurses on its staff is the Middle Atlantic region where the percentage is 16.3. There are proportionately fewest graduate nurses in the West South Central region.

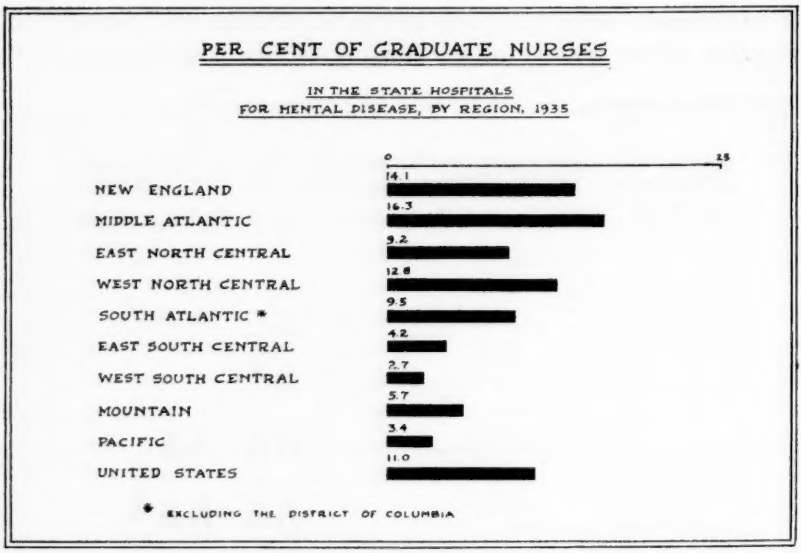

FIGURE 8.

C. OTHER PERSONNEL

There is considerable interregional variation in the ratio of patients to dentists, occupational therapists, social workers, psychologists, and total personnel. The services of occupational therapist, social worker, and psychologist are not needed for every one of the patients at any one given time. It would be most desirable to determine the average case load for each of these employees. Since such data are not available, the ratio of all patients to these employees will be presented.

These data are shown in table 37.

TABLE 37.—*Ratio of patients to other personnel, by region, 1935*

Region	Average daily resident patient population	Dentists		Occupational therapists		Social workers		Total personnel	
		Number	Patient ratio	Number	Patient ratio	Number	Patient ratio	Number	Patient ratio
New England	32,740	16	2,046.3	96	341.0	37	884.9	7,540	4.3
Middle Atlantic	86,136	46	1,872.5	270	319.0	109	790.2	17,492	4.9
East North Central	67,603	25	2,704.1	159	425.2	35	1,931.5	9,737	6.9
West North Central	34,742	14	2,481.6	60	579.0	3	11,580.7	4,502	7.7
South Atlantic [1]	37,146	16	2,321.6	39	952.5	8	4,643.3	4,788	7.8
East South Central	19,162	7	2,737.4	22	871.0	1	19,162.0	2,163	8.9
West South Central	26,853	11	2,441.2	32	839.2	9	2,983.7	3,247	8.3
Mountain	9,448	4	2,362.0	12	787.3	2	4,724.0	1,204	7.8
Pacific	28,639	11	2,603.6	20	1,432.0	6	4,773.2	3,331	8.6
United States [2]	347,532	151	2,301.5	724	480.0	213	1,631.6	55,581	6.3

[1] Excludes the District of Columbia.
[2] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

Ratio of patients to dentists.—Dental care is without doubt a reflection of the general attitude of the hospital towards the physical needs of its patients. The patient load per dentist varies from 1,873 in the Middle Atlantic region to 2,737 in the East South Central region. It is difficult to determine the exact patient load per dentist, since in some States 2 part-time dentists may do the work of 1 full-time dentist and yet the hospital will indicate that it has 2 dentists on its staff.

Ratio of patients to occupational therapists.—The department of occupational therapy concerns itself primarily with the rehabilitation of the patient by providing him with work which occupies his time while in the hospital and serves the double purpose of adjusting him to the hospital environment and preparing him for a better social and vocational adjustment when he leaves the hospital. In hospitals where this department is poorly organized, attendants find it difficult to occupy the time of the patient profitably. As a result the patients are left to daydream, or they may become restless and have to be restrained. This department is an important area of the hospital's work. Not all patients are strong enough or cooperative enough to be able to participate in occupational therapy. In order to evaluate the adequacy of the department it would be necessary to obtain the active patient load per occupational therapist. Since these data are not available, the total patient load per occupational therapist was utilized instead. This load varies from 319 in the Middle Atlantic States to 1,432 in the Pacific States.

Ratio of patients to psychologists.—Psychologists in State hospitals are engaged chiefly in determining the mental level of newly admitted patients and in providing other psychometric services. The total number of psychologists and psychometrists in State hospitals is 42. However, in some States the work of the psychologist is done by individuals who for pay-roll purposes are designated in some other employment category. For this reason it is difficult to gauge the amount of psychological work being given to patients. On the basis of official statistics provided by the Bureau of the Census[16] only 9 States and the District of Columbia have psychologists on the staff of their State hospitals. In these States the ratio of the patients to psychologists varies from 524 to 63,384, the average being 4,196.

Ratio of patients to social workers.—The social-work department is the connecting link between the hospital and the patient's home and community. Through this department the family and community background of the patient's illness are determined when he enters the hospital, and the groundwork laid for his gradual return to the community after his discharge. The regions vary considerably in the

[16] Special tabulation in personal communication from Dr. Leon E. Truesdell, chief statistician for population, Bureau of the Census, U. S. Department of Commerce.

load imposed on social workers. Here, too, as was the case with the occupational therapist, it would be better to determine the load per worker on a more suitable basis than the total number of patients in the hospital. But, in the absence of such data, the total patient population was utilized. The patient load per social worker varies from 790 in the Middle Atlantic States to 19,162 in the East South Central States.

Ratio of patients to total personnel.—Considering all the employees of the State hospital as a group, the ratio of patients to employees is 6.3 for the entire country. The regions in which the patient ratio to employees is less than the average for the country are the New England and Middle Atlantic States, where there are, respectively, only 4.3 and 4.9 patients to each employee. In the other regions the number of patients per employee is considerably higher, the highest ratios being shown by the East South Central, Pacific, and West South Central regions. In these regions the number of patients to each employee is 8.9, 8.6, and 8.3, respectively, or about one and one-third times as high as the ratio for the entire country.

SUMMARY

Medical personnel.—According to the standard established by the American Psychiatric Association, the ratio of patients to assistant physicians should not be in excess of 150. All of the regions fall below this standard, the ratio for the entire country being 258 patients per assistant physician, an overloading of the medical staff to the extent of 72 percent. The variation between the regions ranges from a ratio of about 190 in the New England and Middle Atlantic States to 445 in the East South Central States. If the standards of the American Psychiatric Association were adhered to, there would be an immediate need of about 1,000 additional assistant physicians on the staffs of the State hospitals of the country.

Nursing personnel.—According to the standards of the American Psychiatric Association, the ratio of patients to the nursing personnel should not exceed 8. Two of the regions, the New England and Middle Atlantic, live up to this standard. For the country as a whole the ratio is 10.6 patients per member of the nursing staff, or an overloading of 32 percent. The patient ratio ranges from 7.5 in New England to 13.8 in the East South Central States. If the standards of the American Psychiatric Association were complied with, there would be a need of some 10,000 more nurses and attendants in State hospitals. It should be pointed out that the standards of the American Psychiatric Association were based on a 12-hour day. With the increasing tendency to introduce 3 shifts of 8 hours each, the old standard will have to be modified.

Only 11 percent of the nursing staff consists of graduate nurses in the country as a whole. The proportion of graduate nurses on the

nursing staff ranges from about 3 percent in the West South Central States to some 16 percent in the Middle Atlantic States.

Dentists.—The ratio of patients to dentists in the country as a whole is 2,300 patients to 1 dentist. The load is lightest in the Middle Atlantic States where the ratio is 1,900 patients to each dentist, and it is highest in the East North Central and East South Central States where the ratio is about 2,700.

Occupational therapists.—The ratio of patients to occupational therapists is 480 in the country as a whole. Occupational therapy seems to be least developed in the Pacific States where there are 1,400 patients to each occupational therapist, and most highly developed in New England and the Middle Atlantic States where the ratio is a little in excess of 300.

Psychologists.—The average ratio of psychologists and psychometrists to patients in those States in which they are employed in State hospitals is 4,196. Thirty-nine State hospitals either do not employ psychologists at all, or do not list them as psychologists on their pay rolls.

Social workers.—For the country as a whole the ratio of patients to social workers in the State hospitals is 1,600. In the New England and Middle Atlantic regions the ratio is only one-half as large, with some 800 patients to each social worker. In some of the regions social work is almost nonexistent. There is only 1 social worker in the entire East South Central region. Outside of the New England, Middle Atlantic, and East North Central States, social work has made relatively little progress in securing a foothold in the State hospital system.

Total personnel.—The ratio of patients to all employees is 6.3 for the entire country.[17] In the more progressive regions (New England and Middle Atlantic) the ratio of patients to employees is about two-thirds of the ratio for the entire country. In the poorer regions the ratio is as high as one and one-third times the ratio for the country as a whole.

9. COST OF CARE OF THE MENTALLY DISEASED

Total costs.—The best estimate now available of the total expenditure for caring for the hospitalized mentally diseased in the United States is $230,865,000 for 1937 (7) or an average per capita cost of $534.25. This includes cost of hospital care and treatment as well as housing and general administration. Data on total costs are available for a few States only. The data that are available for all the States give only the annual expenditures for maintenance in the State hospitals and do not include capital investment charges and general administration costs. These data are presented in table 38.

[17] The ratio for the entire country includes St. Elizabeths Hospital, District of Columbia. In this hospital the ratio of patients to all employees is 3.2. This is lower than that in any of the States.

TABLE 38.—*Annual per capita maintenance expenditures in State hospitals for mental disease, by region, 1936*

Region	Total	Salaries and wages	Provisions	Fuel, light, and water	Other
New England	$366.89	$197.40	$69.26	$34.16	$66.08
Middle Atlantic	350.77	187.62	77.88	30.45	54.83
East North Central	250.75	121.56	59.23	21.81	48.15
West North Central	222.67	85.29	55.29	25.94	56.15
South Atlantic [1]	186.27	68.68	59.89	15.37	42.33
East South Central	176.18	65.02	50.83	17.35	42.99
West South Central	190.55	69.57	60.13	12.76	48.08
Mountain	225.48	102.70	54.36	19.35	49.07
Pacific	197.20	96.21	47.02	15.49	38.48
United States [2]	269.05	130.70	63.81	23.39	51.14

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1936.

Per capita maintenance costs.—The average per capita cost for maintenance in the State hospitals of the country in 1936 was $269.05 per annum or 74 cents per diem. The annual per capita cost in the various regions ranged from $366.89 ($1.01 per diem) in the New England region to $176.18 (48 cents per diem) in the East South Central region.

For the country as a whole the per capita cost for salaries and wages was $130.70. In this factor, too, the regions vary considerably, from $197.40 in the New England region to $65.02 in the East South Central region.

The per capita cost for food, in the country as a whole, was $63.81 per annum or 17 cents per diem. In obtaining this figure the total amount spent for food was divided by the number of patients in average daily residence in the hospitals. This per capita cost is, of course, too high since food for the hospital staff and other personnel is also included in this amount. In order to obtain the approximate food costs per person, the total number of employees was added to the number of patients in average daily residence and the per capita cost for both combined was obtained.

These results are shown in table 39.

TABLE 39.—*Maintenance expenditures for provisions in State hospitals for mental disease, by region, 1936*

[Per capita patient and employee expenditure]

Region	Amount	Index	Region	Amount	Index
New England	$56.21	102.6	East South Central	$45.91	83.8
Middle Atlantic	64.10	117.0	West South Central	53.52	97.7
East North Central	51.59	94.2	Mountain	48.21	88.0
West North Central	48.89	89.2	Pacific	42.08	76.8
South Atlantic [1]	52.75	96.3	United States [2]	54.79	100.0

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1936.

The per capita expenditure for the country as a whole for provisions was $54.79 for patients and employees combined. This corresponds to a cost of 15 cents per diem. The Middle Atlantic region is highest in its per capita expenditure. The Middle Atlantic and New England regions are the only regions with expenditures higher than the average for the country. The lowest expenditure is in the Pacific region.

For the country as a whole, $23.39 per patient is spent annually for fuel, light, and water. The variation in the regions is from $34.16 in the New England region to $12.76 in the West South Central region.

It is quite apparent that large differences exist between regions in the amount of money spent for the various purposes of maintenance. It would be interesting to determine whether the regions differ, too, in the relative amount spent for these purposes. Such an analysis might reveal weak spots in the pattern of expenditures. Table 40 shows the percentage expenditures for the various purposes.

TABLE 40.—*Percentage of maintenance expenditures by purpose of expenditure in State hospitals for mental disease, by region, 1936*

Region	Total amount	Salaries and wages	Provisions	Fuel, light, and water	Other
New England	$12,339,742	53.8	18.9	9.3	18.0
Middle Atlantic	31,356,797	53.5	22.2	8.7	15.6
East North Central	17,282,496	48.5	23.6	8.7	19.2
West North Central	7,913,281	38.3	24.8	11.6	25.2
South Atlantic [1]	7,198,630	36.9	32.2	8.3	22.7
East South Central	3,491,567	36.9	28.9	9.8	24.4
West South Central	5,254,579	36.5	31.6	6.7	25.2
Mountain	2,168,460	45.5	24.1	8.5	21.8
Pacific	5,723,231	48.7	23.8	7.9	19.5
United States [2]	96,157,583	48.6	23.7	8.7	19.0

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1936.

Proportion of expenditures by purpose.—The proportion of total expenditures devoted to salaries and wages varies from 36 percent in some of the southern States to more than 50 percent in some of the northern States. Generally speaking, States that have higher standards of care tend to spend half or more than half of their expenditures for salaries and wages.

With regard to provisions, the range is from 20 to 30 percent, while for fuel, light, and power the range is from 6 to 12 percent.

Variability in expenditures.—It is clear from these comparisons that the amount of money expended for the care, food, and comfort of a patient depends largely on the State in which he happens to live. Some idea of the great variability in these expenditures is given in figure 9.

In this figure the proportion of all patients that consume each measured proportion of the total expenditures is shown. Thus, in the case of expenditures for provisions the less fortunately situated half[18] of the patients receive the benefit of only one-third of the expenditures, while the more fortunate half of the patients get the remaining two-thirds of the expenditures. The same situation holds true of fuel, light, and power, although it is conceivable that part of the differential in the case of this expenditure is due to climatic differences.

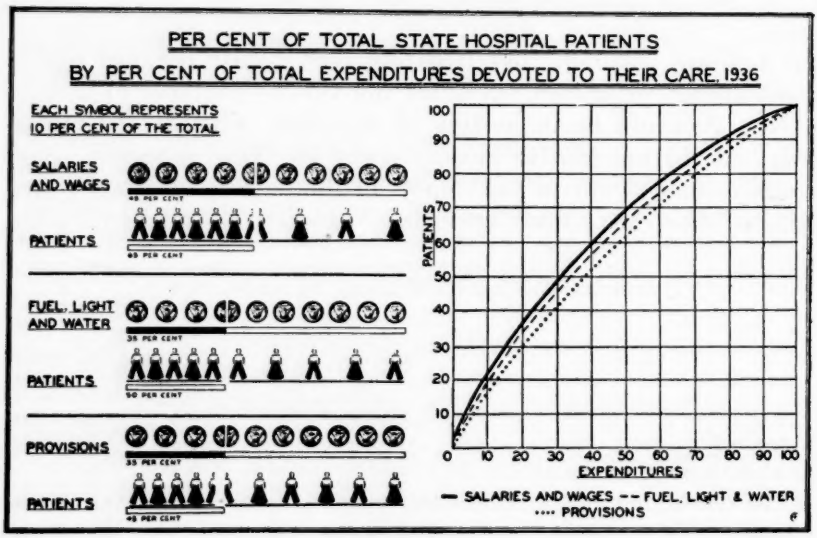

FIGURE 9.

With regard to salaries and wages the less fortunate two-thirds of the patients receive the benefit of only 46 percent of all the expenditures, while the more fortunate third receive the benefit of the remaining 54 percent.

If each of the three types of expenditures were constant for all the States, the curves shown in figure 9 would have been straight lines. The degree to which each curve deviates from a straight line is a measure of the degree of irregularity that exists from State to State in the per capita expenditures for that purpose. It will be noted that the expenditures for salaries and wages show the greatest irregularities while the expenditures for fuel, light, and water come next in order. The least irregularity exists in the expenditures for provisions.

[18] In preparing this graph the various States were ranked in the order of their per capita expenditures. Then the proportion that the patients in the lowest rank constituted of all the patients in the country was plotted against the proportion of total expenditures which they consumed. Then, the next State in order of rank was added and the proportion of patients and of expenditures were respectively cumulated.

Trend in per capita maintenance expenditures.—The greater interest in the mentally ill that has arisen since the turn of the century should gradually be reflected in larger per capita expenditures for their care. While increase in per capita expenditures per se are no indication of better care, in the long run larger expenditures may be taken as an indication of greater interest. A comparison of the expenditures for 1922, the first year for which comparable data are available, with 1926 and 1936 is given in table 41, showing the number of patients in average daily residence, the total expenditures, and the per capita expenditures.

TABLE 41.—*Trend in maintenance expenditures in State hospitals for mental disease, 1922, 1926, and 1936*

Year	Patients	Maintenance expenditures	Per capita maintenance expenditures
1922	225,685	$63,673,160	$282.13
1926	237,646	72,931,824	306.89
1936	357,396	96,157,583	269.05

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce.

It will be noted that the total annual maintenance expenditures have risen from 63 millions in 1922 to 96 millions in 1936. The per capita expenditures have not shown a similar increase. In 1922 the per capita expenditure was $282. It rose to $306 in 1926 and then declined to $269 in 1936.

Cost-of-living index.—It should be remembered that during these 14 years the purchasing value of the dollar did not remain constant. In order to equate the expenditures in terms of equivalent dollars, the cost-of-living index was utilized to adjust the per capita expenditures.

After correction for fluctuations in the value of the dollar, the per capita expenditure indicates an increasing trend, rising from $289.66 in 1922 to $294.24 in 1926 and to $329.72 in 1936.

However, the increase in per capita expenditures from 1922 to 1936 is only 14 percent, while the increase in total expenditures during the same period is 50 percent. Apparently the State hospital populations are increasing faster than the State expenditures for their care.

When actual per capita expenditures for the individual regions are considered, there are only 3, the New England, Middle Atlantic, and East North Central, in which the expenditure in 1936 was greater than that of a decade and a half previously.

After adjusting for the variation in the purchasing value of the dollar, it is found that 5 of the 9 regions show an increase in per capita expenditures from 1922 to 1936, and in 3 of these regions the trend rises consistently during this period of 14 years.

These data are shown in table 42.

TABLE 42.—*Per capita maintenance expenditures in State hospitals for mental disease adjusted by cost-of-living index, by region, 1922, 1926, and 1936*

	Per capita maintenance expenditures			Per capita maintenance expenditures adjusted by cost-of-living index [1]		
	1922	1926	1936	1922	1926	1936
New England	$328.03	$382.61	$366.89	$336.78	$366.83	$449.62
Middle Atlantic	332.63	335.09	350.77	341.51	321.28	429.87
East North Central	205.20	275.55	250.75	210.68	264.19	307.29
West North Central	259.75	293.65	222.67	266.68	281.54	272.88
South Atlantic [2]	232.47	272.83	186.27	238.68	261.58	228.27
East South Central	224.47	246.93	176.18	254.46	236.75	215.91
West South Central	246.26	239.91	190.55	252.83	230.02	233.52
Mountain	231.62	365.90	225.48	237.80	350.81	276.32
Pacific	251.30	237.26	197.20	258.01	227.48	241.67
United States [3]	282.13	306.89	269.05	289.66	294.24	329.72

[1] The cost-of-living index computed with 1923 as the base (1923=100) has the following values for the years mentioned: 1922, 97.4; 1926, 104.3, and 1936, 81.6.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1922, 1926, 1936. Cost-of-Living Index in the United States, 1914–36, National Industrial Conference Board, 1936. Changes in Cost of Living in the United States, Sept. 15, 1938, Monthly Labor Review, vol. 47, No. 6, p. 1349 (December 1938).

SUMMARY

The total cost of caring for the mentally diseased is more than $230,000,000 annually, or an average expenditure of $534.25 per patient.

The maintenance expenditures alone, not including the capital investment charges and the general administration costs, amount to $269.05 per annum or 74 cents per diem in the State hospitals of the United States.

The most important item in the maintenance expenditures is the amount spent for salaries and wages. In the better hospitals this item accounts for more than half of the total expenditures. The amount devoted to this purpose varies from $65 per patient in the East South Central region to $197 per patient in the New England region, nearly three times as high.

The variation in the other items of expenditure are considerably less. Apparently the regions that have low per capita costs cut down on the number of employees and on their salaries and wages.

The annual maintenance expenditures in the State hospitals have increased from 63 millions in 1922 to 96 millions in 1936, and the per capita expenditures have declined somewhat, from $282.13 in 1922 to $269.05 in 1936. However, when the variation in the cost of living index between 1922 and 1936 is taken into consideration, the per capita expenditures, in terms of 1923 dollars, show a constant increase during these years, rising from $290 in 1922 to $330 in 1936.

IV. The Influence of Geographic Region on Mental Disease Indexes

It is apparent that the geographic regions vary widely in incidence and prevalence of hospitalized mental disease. The cause of this variation is not easy to determine. At least two tenable hypotheses present themselves. One is that these variations reflect the true variations in the population of the regions; that is, on the basis of this hypothesis, regions that have low first-admission rates are those in which the general population is least susceptible to mental disease, while regions in which the first-admission rates are high are those in which the general population is most susceptible to mental disease. The second hypothesis is that the true incidence and prevalence of mental disease is independent of geographic location, the variation being caused by (1) adequacy of facilities for hospitalization; (2) attitude of the community toward the hospital; (3) urban-rural distribution of the region; (4) age distribution; and other environmental factors. If the first hypothesis were true, the goal of this analysis would be to establish the biological endemic differentials that are responsible for the differences in innate susceptibility to mental disease. If the second hypothesis were accepted, it would be necessary to indicate those special factors which tend to depress the first-admission rate below its expected figure. The weight of the evidence seems to indicate that the aforementioned factors are more important than the endemic factors. This study will therefore proceed under the hypothesis that the true incidence and prevalence of mental disease are relatively constant for all the regions.[19]

In evaluating these data it must be kept in mind that complete hospitalization figures by diagnosis are available for first admissions only. With regard to the diagnosis of patients resident in the hospital the data extend only to State hospital patients for the year ended December 31, 1933. As was previously pointed out, the State hospitals care for about 85 percent of all patients in all mental hospitals of the country. Consequently, the variability in hospitalization rate may be increased because some areas have a higher proportion of their total patient population in State hospitals than have other areas. The data with regard to discharges, deaths, and total removal of patients are also limited to State hospital population. These, too, will also show greater variability than would be the case if complete data were available for all patients in mental hospitals.

The influence of regional location on the indexes for each of the four major categories of mental disease will first be presented, and

[19] There is a third possibility that differences may be due to socio-economic factors affecting the population. Many sociologists believe that with the reduction of socio-economic stress much mental illness may be avoided. Since mental disease indexes are lowest in the regions where socio-economic stress is highest, namely the South, this possibility was not entertained, for the data run contrary to this assumption. For a fuller discussion of the evidence for this hypothesis see (*10*).

then the influence of these regional factors on each index for all the different diseases. In order to make the comparisons more readily, the coefficients of variation for each index by major category of diagnosis are presented in table 43.

TABLE 43.—*Coefficients of variation for the indexes of mental disease*

	First admission rates	Hospitalization rates	Discharge rates	Ratio of patient death rates to general death rates	Removal rates	Replacement rates
Diseases associated with exogenous causes	18.2	27.9	15.9	20.2	15.8	9.8
Diseases of the senium	27.1	16.8	20.0	8.8	8.5	8.6
Diseases of psychogenic origin [1]	15.8	27.4	30.6	18.2	25.9	9.1
Other diseases with psychosis	12.0	38.8	24.5	21.7	23.4	7.3
Total	14.8	18.8	17.4	7.0	11.4	10.0

[1] Or without clearly defined tangible cause or structural change.

All patients.—Considering all the patients diagnosed as mentally ill in one group, we note that the factor in which geographic location plays the least important role is the death rate. The interregional variation in this rate (when corrected for the regional death rate in the general population) has a coefficient of variation of only 7 as compared with a coefficient of variation of 17 for discharge rates and 19 for hospitalization rates. Apparently, deaths of patients in the State hospitals are least influenced by geographic location while discharge rates and hospitalization rates are most influenced. This is readily explainable by the fact that discharge rates and hospitalization rates are more dependent on geographic locality and on facilities for hospitalization than are death rates. The latter by their very nature are dependent more upon biological than sociological factors.

The coefficient of variation for replacement rates is also low, 10.0, an indication of the great similarity that exists between the regions with regard to admissions and removals.

Diseases of the senium.—In the group of diseases of the senium a similar situation obtains. Here again the variation in death rates is low and the variation in discharge rates and hospitalization rates is much higher. It is interesting to note that in this group of diseases the interregional variation in first-admission rates is higher than for any of the other rates or indexes. As was pointed out previously, this is probably due to the fact that there is greater variation with regard to policy of admission of this type of patient from region to region, because most of these patients are not so acutely ill as patients in other categories of diseases and are not, therefore, given preference in admission.

Diseases of psychogenic origin.—Again, with regard to the diseases of psychogenic origin, the death rates have smaller variability, while the discharge and hospitalization rates have the highest. The first-admission rates, however, show the lowest variability, reflecting the acute nature of the disease in the majority of patients in this category who seek admission to the hospital.

Diseases associated with exogenous causes.—In the case of diseases associated with exogenous causes, the discharge rates show the least variability from region to region, while the hospitalization rates show the highest variability. The death rates for patients in this category show a rather high interregional variation. This may be a reflection either of the nature of the patients admitted in this diagnosis or of the type of care afforded these patients.

Other diseases with psychosis.—The patients classified in the category "other diseases with psychosis," like the diseases associated with exogenous causes, also have a rather high variability in death rates and in hospitalization rates and a low variability in first-admission rates. They differ from the previous category in that their variation in discharge rates is rather high. Apparently the group of diseases included under "others" varies in composition from region to region. The only common factor is that they are all probably acute in nature as reflected by a very low variability in first-admission rates.

Attention will now be turned from the influence of regional location on each of the diagnostic groupings to a consideration of the regional influence on each mental disease index.

Considering the first-admission rates for the various diagnostic groupings, it is noted that the lowest interregional variation occurs in the group of "others with psychosis" while the highest occurs for diseases of the senium. This has been explained as being due to the rather acute nature of the condition of the patients in the former category and the less acute condition of the patients in the latter category.

In hospitalization rates diseases of the senium show the least variation while "others with psychosis" show the highest variation. It is noteworthy that State hospitals for mental diseases hospitalize a larger proportion of patients with diseases of the senium than of any of the other categories. Hence it would be expected that whatever variability is introduced by the incompleteness of the data would have least influence in the case of this group of diseases.

With regard to discharge rates the greatest variability occurs in diseases of psychogenic origin and the least variability occurs in diseases associated with exogenous causes. The high variability in the case of diseases of psychogenic origin may be a reflection of the difference in policy of discharge from rural to urban areas of patients in this category.

With regard to death rates, the least variation is shown by diseases of the senium. Again, with regard to removal rates, the least variation is shown by diseases of the senium and the highest variation by diseases of psychogenic origin.

To summarize, the interregional variations in mental disease indexes are not due to chance but to differences in either endemic or environmental factors in the population of the various regions. This analysis has shown that at least some of the influences are environmental and some purely administrative in nature. From the point of view of mental health this is a rather fortunate situation since the environmental factors and especially the administrative factors lend themselves to improvement in the direction of providing better care for mental patients.

Indexes of hospital administration and expenditures.—The interregional variation in indexes of hospital administration and expenditures (hospital facilities, care of patients, per capita cost, etc.) were not included in the above discussion of the influence of regional factors on indexes of mental disease because the administrative indexes are so subject to legislative enactments and local attitudes and policies that the variability in these indexes depends more upon local conditions than upon social needs. It is important, however, to determine also the relative influence of local factors on these indexes. The coefficients of variation for these indexes are shown in table 44.

TABLE 44.—*Coefficients of variation for administrative indexes in State hospitals for mental disease*

	Personnel indexes: Ratio of patients to—			Maintenance expenditure indexes: Per capita expenditures for—				
	Assistant physicians	Nurses and attendants	Total employees	Total	Salaries and wages	Provisions	Fuel, light, and water	Other
Average	263.6	10.7	6.3	$259.46	$124.40	$62.13	$23.00	$49.92
Standard deviation	78.0	2.2	1.5	84.07	54.70	14.76	8.40	11.37
Coefficient of variation	29.6	20.8	24.2	32.40	43.97	23.76	35.22	22.78

With regard to personnel ratio, the physician ratio shows the most variation and the nursing ratio the lowest variation. The influence of regional location makes itself most felt in the provision of medical care.

Among the coefficients of variation for expenditures, the influence of regional location makes itself felt most in the per capita expenditure for salaries and wages. The coefficient of variation for this item, 43.97, is one and one-third times as high as the coefficient of variation for the total expenditures and nearly twice as high as the coeffi-

cient for provisions. Apparently, the per capita expenditure for salaries and wages depends more upon the geographic locale than do food expenditures and any of the other items of expenditure.

Our interest thus far has been primarily in the individual indexes of mental disease and its care. Attention will now be directed to integrating these findings into the total index pattern of each region. In order to give a succinct profile pattern for each region there will be presented the relative indexes with reference to the United States as a base.[20] This can be done by dividing each index by the index for the United States. These relative indexes are presented in table 45 and figure 10.[21]

TABLE 45.—*Indexes of rates and ratios of mental disease and its care, by region*

[United States=100]

Region	Hospitalization rate	First-admission rate	Retention rate	Survival rate	Persistence rate	Ratio of old to new patients	Patient overcrowding	Physician ratio	Nursing ratio	Maintenance ratio
New England	141.7	115.7	103.8	100.4	100.3	133.2	103.2	133.5	141.2	136.4
Middle Atlantic	110.5	118.0	112.3	105.6	108.8	101.5	100.2	137.2	120.5	130.4
East North Central	90.6	100.0	96.7	101.9	97.9	88.0	95.2	88.0	92.2	93.2
West North Central	91.2	82.3	122.6	101.6	115.7	111.4	100.9	70.7	79.7	82.8
South Atlantic	85.6	86.6	101.0	93.0	96.9	93.8	97.1	75.2	80.3	69.2
East South Central	69.3	89.4	62.5	87.5	72.4	78.5	99.0	58.0	76.8	65.5
West South Central	73.7	82.4	91.6	91.8	95.3	85.6	99.7	73.2	80.3	70.8
Mountain	88.4	78.1	128.2	119.0	112.4	121.7	96.6	73.9	86.9	83.8
Pacific	107.8	114.3	94.1	108.9	95.3	88.3	110.4	84.9	84.1	73.3
United States	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

It will be noted that the New England and Middle Atlantic regions are above average in each of the indexes, while the South Atlantic, East South Central, and West South Central regions are below the average in each of the indexes.

On the basis of these profiles it appears that the discharge rate is lower in the regions with better facilities than in the poorer regions. For this reason the discharge rate was converted to its reciprocal, the retention rate. Similarly, the death rate ratio was converted to its reciprocal, the survival rate. The removal rate and turn-over rate also gave lower indexes for the regions with better facilities than for the poorer regions. These indexes were also inverted and called the persistence rate and ratio of old to new patients, respectively.

Overcrowding should logically be lower in the more progressive regions than in the poorer regions. But our indexes show that the reverse holds true. Apparently, regions that do not report overcrowding either fail generally to make proper provision for their patients or tend to overestimate their rated capacity.

[20] United States=100.

[21] The profiles have been drawn in continuous curves rather than in bars in order to facilitate visual comparisons. The shape of the profile would of course be altered if the indexes were rearranged in another order, but the position of each index above or below 100 would not be altered.

V. Summary

Mental diseases are the Nation's greatest hospital problem, with more than half of all hospital beds occupied by mental patients. The care of these patients is not uniform throughout the country. This study attempts to depict the vast differences that exist among the nine geographic regions of this country with respect to the care of the mental diseases.

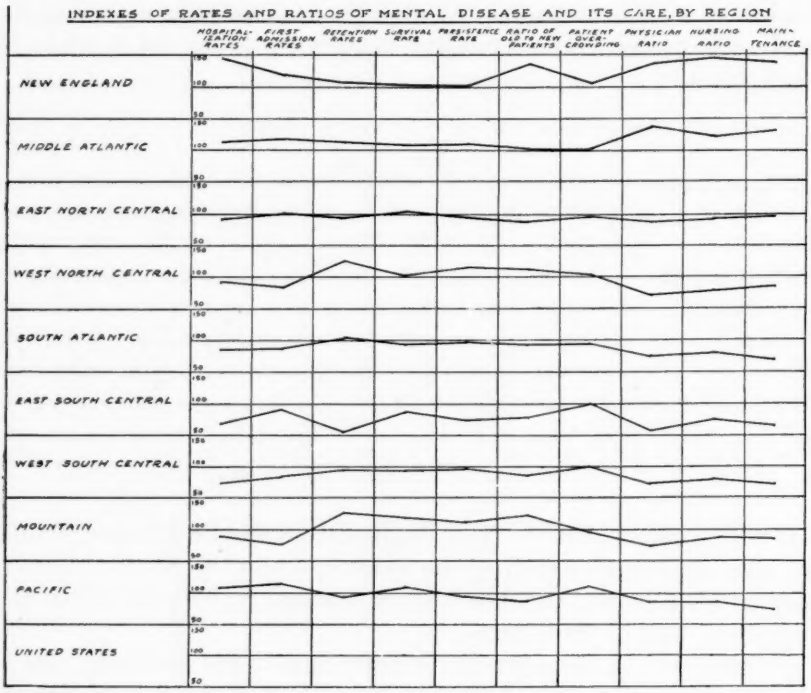

FIGURE 10.

Type of control of hospital.—The State hospital occupies the foremost place in the care of mental diseases in all the regions. Next in order of importance are the city and county hospitals, with 8.3 percent of all the patients, followed by the Veterans' Administration facilities, with 4.4 percent, and private hospitals, with only 2.6 percent. The type of hospital that varies most in importance from region to region is the city and county hospital which is totally or nearly totally absent in five regions but cares for from 11 to 17 percent of the patients in the Middle Atlantic and East North Central States.

Hospitalization rate.—The hospitalization rate also varies considerably from region to region. Some of this variation in hospitalization rate is apparent rather than real, since the populations of the various regions differ in age, sex, and rural-urban distribution. Because age is such an important factor in causing interregional differences, the

influence of age distribution was minimized by relating the number of patients to the age range from which they are generally drawn. Even after this correction is introduced, the hospitalization rates vary from 315 per 100,000 aged 15 and and over in the East South Central region to nearly twice as much, 617, in the New England region. Applying the estimate of the minimally expected hospitalization rate, 530 per 100,000 aged 15 and over as a standard, the hospitalization rates range from 54 percent to 115 percent of this minimal standard. In applying this minimal standard, the tacit assumption is made that the incidence and prevalence of mental diseases is independent of the geographic distribution of the population. Whether this assumption is valid or not may be debatable, but most present-day evidence seems to indicate that it is a tenable, working hypothesis. On the basis of this assumption, deviations in rates may be associated with age, sex, urban-rural, socio-economic, and other factors in the regions, as well as with the adequacy of hospital facilities.

Parole.—In addition to the number of patients in hospitals, there is a growing number of patients on parole. About 10 percent of all the patients on the books of the hospitals are on parole, and the proportion varies from 8 percent in the Mountain region to 17 percent in the South Atlantic region. A small but ever-increasing number are found under family care.

Major categories of diagnosis.—About two-thirds of all the patients in the State hospitals are diagnosed in the category of diseases of psychogenic origin or without clearly defined tangible cause or structural change (dementia praecox, manic-depressive psychosis, paranoia, etc.). About one-twelfth of all the patients are in the group of old age diseases and another twelfth in the group of diseases associated with exogenous causes (alcohol, syphilis, etc.). About 17 percent are in the category of "other diseases" (epileptic psychoses, psychoses with mental deficiency, with other brain or nervous diseases, and undiagnosed conditions), and 3 percent are diagnosed as without psychosis.

Diseases of psychogenic origin.—The group of diseases in the psychogenic category accounts for 41 percent of the new patients annually admitted and for 64 percent of all resident patients at a given time. The hospitalization of new patients (first-admission rate) is 40 per 100,000 of the population aged 10 to 69, the age range from which the majority (middle 90 percent) of all of these patients are drawn. This rate varies from 26 in the Mountain region to 49 in New England, but the variability in these rates is considerably less than the variability shown by the other categories of disease. Apparently the chances of gaining admission to a hospital are not so dependent upon the geographic location of the individual in the case of the psychogenic group of diseases as in the case of other groups.

The number of patients of the psychogenic group in hospitals is 275 per 100,000 of the general population aged 20 to 84, the age range from which the vast majority (middle 90 percent) of these patients are drawn. This includes only the patients in State hospitals for mental disease as of 1933, since no data are available for the other types of hospitals and no more recent data are on hand even for the State hospitals. The hospitalization rate varies from 118 in the East South Central region to 418 in the New England region. The variability in the regional hospitalization rates for this group of diseases is considerably larger than the variability for the other categories. Part of this variability is due to the fact that data for only State hospital patients are available. If the data for all hospitals were available, the variability might be decreased.

The discharge rate and death rate in the psychogenic group of diseases are relatively low and the variation in these rates from region to region is also low. The turn-over of patients in this category is lower than in any of the other disease groups, the ratio of new patients to total patients being only about one-eighth. In general, these patients are characterized by low discharge and death rates and, therefore, they tend to accumulate in large numbers in the hospitals.

The first admissions for this category of diseases are not distributed uniformly among the various types of hospitals. The private hospitals get considerably more than their share while the other types of hospitals get less than their expected share of patients.

Diseases of the senium.—The diseases of the senium account for 18 percent of all the new patients and 8 percent of all the resident patients in the hospital on a given day. The first-admission rate is 60 per 100,000 aged 45 and over for the entire country, and varies from 41 in the South Atlantic region to 86 in the Middle Atlantic region. The regional variation in first admission rates is considerably higher in this category of diseases. Apparently the chances of gaining admission to a hospital vary more from region to region for a patient in this group of diseases than for one in the other groups.

The hospitalization rate for the senescent group is 180 per 100,000 aged 55 to 89, and varies from 112 in the East South Central region to 209 in the New England region. The regional variation in hospitalization rates in this group of diseases is smaller than in the other categories. Apparently the probability of hospitalization for this cause is less dependent upon geographic location than is hospitalization for other causes. Since the regional variation in first-admission rates was previously found to be one of the highest, the low variation in hospitalization rates needs clarification. One possible explanation is the fact that the first-admission rates are for all hospitals while the hospitalization rates are for State hospital patients only. If all

patients had been included perhaps the difference in variability would tend to disappear.

The discharge rate for this group of diseases is rather low, but the death rate, because of the advanced age of the patients, is rather high. However, a comparison of the death rates in this group of patients with the death rates in the corresponding general population indicates that, whereas, in general, patient death rates are about 7.8 times as high as the comparable death rates in the general population, the death rate for diseases of the senium is only five times as high.

The regional variation in both death and discharge rates in this group is low as compared with the variation in rates for the other categories. The rate of removal of patients is highest for this category, nearly a third of the patients under treatment dying or being discharged in the course of the year. The rate of turn-over is also high, about half of the patients during the year being new admissions of less than one year's standing. In general, the patients in this category tend to be removed by either death or discharge and consequently the rate of removal and turn-over is quite high.

The first admissions for this category of diseases are not distributed uniformly in the various types of hospitals. The State hospitals get somewhat more than their expected share, while the city and county hospitals get somewhat less than their share. The Veterans' Administration facilities and the private hospitals get considerably less than their expected share of patients in this category.

Diseases associated with exogenous causes.—The patients in the category of diseases associated with exogenous causes constitute 15 percent of all the new admissions and 8 percent of the resident population of the State hospitals. The first-admission rate for the entire country is 23.9 per 100,000 aged 25 to 64, and it varies from 15 in the West North Central region to 27 in the Pacific region. The variability in regional first-admission rates for this group of diseases is lower than the variability for rates for diseases of the senium. Apparently the acute nature of these diseases tends to reduce regional variation in gaining admission to the hospitals.

The hospitalization rate for diseases associated with exogenous causes is 52 per 100,000 aged 30 to 74, and varies from 26 in the East South Central region to 81 in the New England region. The variability in regional hospitalization rates is rather high and attributable to the fact that only State hospital patients are considered. If all the patients in each region had been included, the variability might have been lower.

The discharge rate for this category is higher than for any of the other categories, nearly 15 percent of all patients under treatment in the course of a single year being discharged during that period. The

regional variation in discharge rates is smaller for this category of diseases than for any of the other categories. Apparently the discharge policy with regard to diseases associated with exogenous causes is least affected by local conditions within the regions.

The death rate for this category of diseases is 11 percent of the patients under treatment, or 7.6 times as high as the death rate in the corresponding general population. The variability in the ratio of patient to general death rate for this group of diseases is higher than in any of the other categories. Regional differences in care, type of patient admitted, and other factors, tend to create this great variability in death rates.

About one-fourth of all the patients in this category are either discharged or removed through death. The variability in removal rate is higher than the corresponding variability for diseases of the senium, but it is only two-thirds of the variability for diseases of psychogenic origin. A little more than one-third of all the patients in this category are first admissions of less than one year's standing.

The distribution of the first admissions in this category among the various types of hospitals is quite uneven. There is a relative preponderance in the Veterans' Administration facilities and in the city and county hospitals and an under-representation in the private hospitals. The State hospitals, too, get only 98 percent of the expected number.

Other diseases with psychosis.—The group of other diseases with psychosis accounts for 14 percent of all first admissions and 17 percent of the resident population. The first-admission rate for the entire country is 12 per 100,000 aged 5 to 74, and varies from 9 in the West North Central region to 13 in the East North Central region. The regional rates show the lowest variation for this category of diseases. The hospitalization rate for the entire country is 62 per 100,000 aged 10 to 59, and varies from 40 in the Middle Atlantic and East North Central regions to 122 in the East South Central region. The large rate in the latter region is primarily due to the large proportion of undiagnosed patients. The variation in hospitalization rates from region to region is higher for this group of diseases than for any of the other groups. Apparently regional policies with regard to admission of mental defectives and epileptics diagnosed as with psychosis, as well as differences in dispatch with which patient diagnoses are made, account for this high variability.

The discharge rate for this group of diseases is next to the lowest of all the categories, only the rate for diseases of the senium falling below it. Only 8.4 percent of all patients under treatment in the course of the year are discharged in that period. The interregional variability in discharge rates is one of the highest.

The death rate for this group of diseases is 6.4 percent of the patients under treatment and the ratio of patient to general death rate is 7, a little less than the average ratio for all the diseases. The excess of patient death rates over the corresponding general death rates varies from 4.5 in the East South Central region to 8.9 in the East North Central region. This interregional variation is higher than for any of the other groups of diseases and is probably due to the wide variation in types of patients included in this category.

About 15 percent of all the patients under treatment in this category during the year are removed either through death or discharge in the course of the year. The interregional variation in rate of removal is relatively high.

About one-fifth of all the patients in the hospital in this category are first admissions of less than one year's standing.

The first admissions in this category are not distributed in the different types of hospitals in the same proportions as the total number of patients. There is a relative preponderance in the Veterans' Administration facilities and the county and city hospitals and an under-representation in the private hospitals. The State hospitals receive their expected share of these patients.

Patients without psychosis.—Because of regional differences in facilities as well as in legal provisions, some hospitals care for a larger proportion of patients diagnosed as without psychosis than do others. In some States the majority of these patients are the feeble-minded who cannot gain admission to the overcrowded State schools. The proportion of patients diagnosed as without psychosis varies from less than 1 percent in the Middle Atlantic region to 7.3 percent in the West South Central region. The patients in this category of diseases will be treated separately in another publication.

All psychoses.—Considering all the categories of diseases together, the first admission rate for the entire country is 95 per 100,000 aged 15 and over, and the hospitalization rate is 375 per 100,000 of the same age group. About 9 percent of those under treatment during the course of the year are discharged in the same period and 8 percent more die during the year. The ratio of patient to general death rate is 7.9. The excess of deaths in the patient population is primarily due to the presence of many old, infirm, and physically ill patients in the hospitals.

The total removal rate, including deaths and discharges, is 16 percent; that is, one-sixth of all the patients under treatment in the course of the year are either discharged or removed by death in the course of the year. A corresponding percentage of new admissions enters during the year to take the place of those removed. But number of new admissions alone (excluding readmissions) is higher

than the number of removals, so that the influx is higher than the outgo. This is the reason why the hospitals are ever expanding.

During the past decade and a half there has been an increasing tendency for greater representation of the older age groups among first admissions. This tendency is more evident among new admissions than among resident patients owing to the large removal rate among the aged.

Overcrowding.—There are 475 hospitals caring for the mentally diseased in the United States. About 42 percent of these hospitals are under private control while the rest are under State, Federal, county, or city control. State-controlled hospitals constitute only 37 percent of the total but it is in these institutions that the vast majority of the patients are found. These institutions are notoriously overcrowded beyond their rated capacity, although actual estimates of the degree of overcrowding cannot be made with accuracy. The estimates of rated capacity that are available indicate that for the entire country the overcrowding is about 11 percent of the rated capacity and the range in the various regions is from 6 percent in the East North Central region to 24 percent in the Pacific region.

Medical personnel.—There were 1,542 physicians caring for the 347,000 patients in average daily residence in the State hospitals for mental disease during 1935. Of this number 166 were superintendents devoting the majority of their time to administrative duties, and 1,344 were assistant physicians devoting full time to care of patients. In addition there were some 33,000 nurses and attendants, 151 dentists, 724 occupational therapists, 213 social workers, and some 35 psychologists and psychometrists.

The ratio of patients to assistant physicians in the entire country is 259. This patient ratio varies from 189 in the Middle Atlantic States to 446 in the East South Central States. Utilizing the minimal standards established by the American Psychiatric Association in 1926, the degree of overloading of the medical staff is 72 percent for the entire country, and ranges from 25 percent in the Middle Atlantic States to nearly three times the expected load in the East South Central States. If all the State hospitals in the country were to adhere to even the minimum standards, there would be an immediate need of 973 additional assistant physicians to care adequately for the present patient population.

Nursing personnel.—The nursing personnel also is overloaded with patients beyond the minimal standard estimated by the American Psychiatric Association, but this degree of overloading is somewhat less than was the case for the physicians. The range is from no overloading in New England to 73 percent overloading in the East South Central States, the average for the entire country being about

32 percent. If the minimal standards for the American Psychiatric Association were adhered to, there would be an immediate need of 10,000 additional nurses and attendants. Not all the nurses and attendants that are now employed have adequate training for their work. According to the best estimates available only 11 percent of the total nursing staff in the State hospitals of the country are graduate nurses. The proportion ranges from 3 percent in the West South Central region to 16 percent in the Middle Atlantic region.

Other personnel.—There are no tentative standards for the minimally expected ratio of patients to dentists, occupational therapists, social workers, psychologists, or total personnel. There are tremendous differences among the regions with regard to the patient ratios for each of these types of personnel. The least variation occurs in the case of the patient ratio to dentists and the most variation occurs in the patient ratio to social workers and to psychologists. The ratio of patients to dentists for all State hospitals in the entire country is 2,300; this ratio ranges from 1,900 in the Middle Atlantic States to 2,700 in the East South Central States. Occupational therapy seems to be least developed in the Pacific region and most highly developed in the New England, Middle Atlantic, and East North Central regions. The ratio of patients to occupational therapists is 480 for all the State hospitals of the country, and ranges from about 300 in the New England and Middle Atlantic regions to a maximum of 1,400 in the Pacific region. Social work seems to have gained little headway in the East South Central, West North Central, and Mountain and Pacific regions. The ratio of patients to social workers is lowest in the New England and Middle Atlantic States. The ratio of patients to psychologists varies greatly, since only 5 regions have psychologists on State hospital staffs. For total personnel the ratio ranges from 4.3 in the New England States to 8.9 in the East South Central region. The average for the country is 6.3.

The influence of regional location is most felt in the case of the personnel other than physicians and nurses and attendants. In the latter two groups, regional factors influence the physician ratio more than the nursing ratio.

Maintenance expenditures.—The annual expenditure for the care of the mentally diseased is $534.25 for each patient in the hospital. This includes maintenance expenditures, capital investment charges, and general administration costs. The maintenance expenditures alone amount to $270 per patient annually or 74 cents per diem. The range is from 48 cents in the East South Central region to $1.01 in the New England region. About half of this amount, or 36 cents, is spent for salaries and wages; about 17½ cents for food; about 6½ cents for fuel, light, and power; and the rest for other expenditures. The most

important item in the maintenance expenditure is the amount spent for salaries and wages; this ranges from 18 cents per diem in the East South Central region to 55 cents, or nearly three times as much, in the New England region. The interregional variation in the case of the other items of expenditures is much less. The annual maintenance expenditures in the State hospitals have increased one and one-half fold from 1922 to 1936, and the per capita expenditure, when allowance is made for variations in the value of the dollar during that period, has also increased but not to the same extent, the increase being only 14 percent.

When allowance is made for variation in the value of the dollar, the increase in total expenditures rises to 80 percent and the per capita expenditures show an increase of only 14 percent.

When the various mental disease indexes are combined in a profile for each region, it is found that the New England region and the Middle Atlantic region are above the average for the country in all the indexes, while the South Atlantic, East South Central, and West South Central regions fall below the average in each of the indexes.

CONCLUSIONS

1. There are tremendous differences between the regions in the hospitalization of mental patients.

2. Most of these differences are due to such factors as age, availability of hospital facilities, urban-rural distribution, and other environmental factors. The amount of variation in hospitalization rates attributable to endemic factors cannot be determined on the basis of the data that are now available.

3. The care that the patients receive, as evidenced by discharge and death rates on the one hand and by ratio of patients to the staff personnel on the other hand, tends to show that some of the interregional inequalities can be removed by better provision for the care of the mentally ill.

4. The variations in per capita costs seem to reflect variations in care rather than variations in economical administration. Regions that provide more adequate care tend to spend more per capita.

5. In order to improve the status of the care of the mentally ill, the following remedial provisions are called for:

(*a*) In order to relieve the present overcrowding, some 130,000 more beds are needed.

(*b*) The present medical staff in State hospitals is only 42 percent of its required strength and the nursing staff is only three-fourths of its required strength. There are whole regions of the country that lack entirely such personnel as social workers and psychologists. The bringing up of the hospital staff to par is an immediate necessity.

(*c*) The greatest hope for coping with the ever-increasing problem presented by mental illness lies through early recognition of illness. This can be attained only by the provision of greater facilities for research in the detection and possible prevention of mental disease and in improvement of the care given mental patients. To carry out such a program more funds must be made available on the one hand for research activities and on the other for clinics and psychiatric wards in general hospitals in which the result of such research can be applied early in the care of the mentally ill.

VI. Acknowledgments

This study was made possible through the cooperation of the National Youth Administration which provided some 15 clerks for computing the necessary data. To these workers as well as to their supervisors the authors are most grateful.

The authors also wish to express their thanks for the continued encouragement offered by Dr. Samuel W. Hamilton, director of the Mental Hospital Survey Committee, and to Medical Director Grover A. Kempf, United States Public Health Service, and associate director of the Mental Hospital Survey Committee. Dr. William L. Russell, Payne Whitney Psychiatric Clinic, the New York Hospital, Assistant Surgeon General Lawrence Kolb, United States Public Health Service, Dr. Winfred Overholser, superintendent, St. Elizabeths Hospital, Dr. Arthur P. Noyes, superintendent, Norristown State Hospital, and Mr. Paul O. Komora, associate secretary of the National Committee for Mental Hygiene, read the manuscript and offered many valuable suggestions.

VII. References

(*1*) Zubin, Joseph: The mentally ill and mentally handicapped in institutions. Supp. No. 146 to the Public Health Reports, U. S. Government Printing Office (1939).

(*2*) Hospital service in the United States. Hospital number of the Journal of the American Medical Association, March 27, 1937.

(*3*) Pennell, Elliot H., Mountin, Joseph W., and Hankla, Emily. Summary figures on income, expenditures, and personnel of hospitals. Hospitals, April 1938.

(*4*) Financial statistics of State and local Governments, 1932. Bureau of the Census, U. S. Dept. of Commerce (1935).

(*5*) Statistical manual for the use of hospitals for mental diseases. National Committee for Mental Hygiene (1937).

(*6*) Patients in hospitals for mental disease. Bureau of the Census, U. S. Dept. of Commerce (1933, 1934, 1935).

(*7*) Pollock, Horatio M.: Economic loss due to mental disease in New York State and the United States, 1937. Paper presented in the Section on Medical Sciences, American Association for the Advancement of Science, Richmond, Va., Dec. 27–31, 1938.

(*8*) Cost of living index in the United States, 1914–1936. National Industrial Conference Board (1936).

(*9*) Changes in cost of living in the United States, Sept. 15, 1938. Monthly Labor Review, **47**: 1349 (December 1938).

(*10*) Landis, Carney, and Page, James D.: Modern Society and Mental Disease. Farrar and Rinehart (1938).

VIII. Appendix

STATES BY REGION

NEW ENGLAND
- Maine
- New Hampshire
- Vermont
- Massachusetts
- Rhode Island
- Connecticut

MIDDLE ATLANTIC
- New York
- New Jersey
- Pennsylvania

EAST NORTH CENTRAL
- Ohio
- Indiana
- Illinois
- Michigan
- Wisconsin

WEST NORTH CENTRAL
- Minnesota
- Iowa
- Missouri
- North Dakota
- South Dakota
- Nebraska
- Kansas

SOUTH ATLANTIC
- Delaware
- Maryland
- District of Columbia
- Virginia
- West Virginia
- North Carolina
- South Carolina
- Georgia
- Florida

EAST SOUTH CENTRAL
- Kentucky
- Tennessee
- Alabama
- Mississippi

WEST SOUTH CENTRAL
- Arkansas
- Louisiana
- Oklahoma
- Texas

MOUNTAIN
- Montana
- Idaho
- Wyoming
- Colorado
- New Mexico
- Arizona
- Utah
- Nevada

PACIFIC
- Washington
- Oregon
- California

TABLE A.—*Total population and population aged 15 and over in rural and urban areas, by region, 1930*

Region	Urban			Rural			Total		
	Total	Aged 15 and over	Percent	Total	Aged 15 and over	Percent	Total	Aged 15 and over	Percent
New England	6,311,976	4,617,161	73.1	1,854,365	1,328,961	71.7	8,166,341	5,946,122	72.8
Middle Atlantic	20,394,707	15,078,221	73.9	5,866,043	4,050,228	69.0	26,260,750	19,128,449	72.8
East North Central	16,794,908	12,445,903	74.1	8,502,277	5,893,337	69.3	25,297,185	18,339,240	72.5
West North Central	5,556,181	4,190,930	75.4	7,740,734	5,282,286	68.2	13,296,915	9,473,216	71.2
South Atlantic [1]	5,221,253	3,771,073	72.4	10,095,467	6,256,956	62.0	15,306,720	10,028,029	65.5
East South Central	2,778,687	2,035,894	73.3	7,108,527	4,432,288	62.4	9,887,214	6,468,182	65.4
West South Central	4,427,439	3,228,830	72.9	7,749,391	4,911,550	63.4	12,176,830	8,140,380	66.9
Mountain	1,457,922	1,062,131	72.9	2,243,867	1,464,934	65.3	3,701,789	2,527,065	68.3
Pacific	5,534,881	4,351,257	78.6	2,659,552	1,925,991	72.4	8,194,433	6,277,248	76.6
United States [2]	68,954,823	51,167,629	74.2	53,820,223	35,550,541	66.1	122,775,046	86,718,170	70.6

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Fifteenth Census of the United States, 1930, Bureau of the Census, Department of Commerce, vol. II.

TABLE B.—*Hospitalization rates for psychoses associated with exogenous causes in State hospitals, by region, 1933*

Region	Alcoholic psychoses		Syphilitic psychoses					Due to drugs, etc.		Total	
			With cerebral syphilis		General paralysis		Total				
	Patients	Rate per 100,000 persons aged 35–74	Patients	Rate per 100,000 persons aged 30–74	Patients	Rate per 100,000 persons aged 30–69	Rate per 100,000 persons aged 30–74	Patients	Rate per 100,000 persons aged 40–69	Patients	Rate per 100,000 persons aged 30–74
New England	1,958	60.1	169	4.3	993	26.7	29.9	30	1.4	3,150	81.3
Middle Atlantic	2,737	27.5	530	4.4	3,922	33.4	36.7	163	2.2	7,352	60.6
East North Central	1,799	18.9	618	5.3	4,788	43.2	46.8	84	1.1	7,279	63.1
West North Central	582	11.7	223	3.6	1,244	21.9	24.6	29	.7	2,078	35.1
South Atlantic [1]	262	5.7	1,149	19.7	883	15.9	35.1	54	1.4	2,348	40.5
East South Central	105	3.3	319	8.5	525	14.6	22.6	26	1.4	975	26.2
West South Central	141	3.7	376	8.1	945	21.3	28.7	56	1.8	1,518	33.1
Mountain	109	8.5	101	6.6	389	26.1	32.0	13	1.2	612	39.8
Pacific	593	16.8	254	6.0	1,320	32.5	37.3	24	1.0	2,191	52.1
United States [2]	8,340	18.9	3,780	7.0	15,390	29.9	35.7	480	1.5	27,990	52.1

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE C.—*Hospitalization rates for diseases of the senium in State hospitals, by region, 1933*

Region	With cerebral arteriosclerosis			Senile psychosis			Total	
	Patients	Rate per 100,000 persons aged 55–84	Rank	Patients	Rate per 100,000 persons aged 60–89	Rank	Patients	Rate per 100,000 persons aged 55–89
New England	1,552	123.2	3	1,114	127.6	6	2,666	209.2
Middle Atlantic	4,219	127.6	2	2,679	119.0	9	6,898	205.6
East North Central	3,214	94.7	5	2,312	97.8	10	5,526	163.2
West North Central	1,027	53.9	9	1,633	121.0	7	2,660	140.7
South Atlantic [1]	851	54.0	8	1,721	158.0	5	2,572	164.6
East South Central	317	30.4	10	861	120.0	8	1,178	112.7
West South Central	840	71.3	7	1,261	160.3	4	2,101	176.8
Mountain	311	74.3	6	528	184.4	2	839	197.4
Pacific	1,436	115.6	4	1,493	173.5	3	2,929	231.3
United States [2]	13,903	89.5	-------	13,790	127.9	-------	27,693	179.7

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE D.—*Patients with disorders of psychogenic[1] origin in State hospitals, by region, 1933*

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional melancholia	Psychoneuroses and neuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
New England	16,787	3,149	19,935	1,144	717	274	276	22 346
Middle Atlantic	45,371	7,938	53,309	2,196	1,630	556	1,151	58,842
East North Central	30,540	6,290	36,830	2,955	1,320	852	631	42,588
West North Central	14,079	4,995	19,074	845	774	258	315	21,266
South Atlantic[2]	12,249	6,247	18,496	576	384	206	321	19,983
East South Central	4,026	2,049	6,075	339	61	93	56	6,624
West South Central	6,953	4,415	11,368	770	262	126	139	12,665
Mountain	3,455	1,034	4,489	464	92	57	44	5,146
Pacific	13,539	3,020	16,559	939	433	99	263	18,293
United States[3]	150,092	39,288	189,380	10,380	5,774	2,527	3,210	211,241

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE E.—*Hospitalization rates for disorders of psychogenic[1] origin in State hospitals, by region, 1933*

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional melancholia	Psychoneuroses and neuroses	With psychopathic personality	Total
	Dementia praecox	Manic-depressive psychosis	Total					
	Rate per 100,000 persons aged —							
	25–69	25–74	25–74	35–79	45–84	25–69	20–69	20–84
New England	387.3	70.1	443.8	33.3	32.3	6.3	5.5	418.3
Middle Atlantic	325.2	55.3	371.4	21.3	26.1	4.0	7.1	343.2
East North Central	232.3	46.2	270.7	29.6	21.4	6.6	4.1	262.5
West North Central	209.9	71.7	213.8	16.0	22.9	8.3	4.0	254.0
South Atlantic[2]	180.6	89.3	264.6	11.5	12.5	3.0	3.8	230.5
East South Central	92.0	45.5	135.0	10.5	3.1	2.1	1.0	118.1
West South Central	126.3	78.1	201.1	20.0	11.4	2.3	2.0	180.0
Mountain	195.8	57.0	246.9	35.2	11.5	3.2	2.1	235.0
Pacific	284.4	61.4	336.5	25.5	18.6	2.1	4.8	315.4
United States[3]	243.3	61.6	297.2	22.4	20.0	4.1	4.5	275.3

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE F.—*Patients with other disorders with psychosis in State hospitals, by region, 1933*

Region	With Huntington's chorea	With brain tumor	With other brain or nervous diseases	With pellagra	With other somatic diseases	Traumatic	Epileptic psychoses	With mental deficiency	Undiagnosed and unknown	Grand total
New England	38	5	333	9	260	111	906	2,421	84	4,167
Middle Atlantic	90	26	816	3	379	357	1,754	3,652	969	8,051
East North Central	135	10	682	2	534	163	1,202	3,329	1,356	7,413
West North Central	73	5	369	4	197	68	963	2,190	3,093	6,962
South Atlantic [1]	27	2	304	420	406	88	2,123	2,582	2,475	8,427
East South Central	34	4	286	337	233	49	995	1,137	5,555	8,630
West South Central	59	11	242	391	235	100	853	1,483	3,439	6,813
Mountain	16	3	65	2	55	31	320	444	912	1,848
Pacific	35	8	206	1	252	86	937	1,074	170	2,769
United States [2]	514	75	3,375	1,169	2,563	1,058	10,193	18,444	18,109	55,500

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE G.—*Hospitalization rates of other disorders with psychosis in State hospitals, by region, 1933*

Region	With Huntington's chorea	With brain tumor	With other brain or nervous diseases	With pellagra	With other somatic diseases	Traumatic	Epileptic psychoses	With mental deficiency	Undiagnosed and unknown	Grand total
	Rate per 100,000 persons aged—									
	15–69	35–64	15–69	25–69	25–69	20–74	20–69	20–69	10–59	10–74
New England	0.1	0.3	5.8	0.2	6.0	2.1	18.2	29.0	1.4	62.5
Middle Atlantic	.4	.3	4.3	.0	2.7	2.1	10.7	13.6	4.9	37.2
East North Central	.7	.1	3.9	.0	4.1	1.0	7.8	13.1	7.3	36.6
West North Central	.7	.1	4.0	.0	3.0	.8	12.2	16.2	32.3	65.2
South Atlantic [1]	.3	.0	3.0	6.1	6.1	1.1	25.7	16.3	22.3	70.5
East South Central	.5	.1	4.5	7.7	5.4	.9	18.6	11.1	78.2	112.4
West South Central	.8	.4	3.0	7.0	4.3	1.4	12.6	11.9	38.8	71.7
Mountain	.6	.3	2.6	.2	3.2	1.4	15.4	11.9	34.6	65.0
Pacific	.6	.3	3.3	.0	5.3	1.5	17.2	12.7	2.7	39.8
United States [2]	.6	.3	4.0	1.8	4.1	1.3	13.9	14.7	20.0	56.1

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE H.—*First admissions for diseases associated with exogenous causes in all hospitals for mental disease, by region, 1935*

[Rate per 100,000 aged 25–64]

Region	Alcoholism		Psychoses with syphilis					Due to drugs, etc.		Grand total	
			General paresis		Other forms of syphilis of the central nervous system		Total (rate)				
	Patients	Rate	Patients	Rate	Patients	Rate		Patients	Rate	Patients	Rate
New England	497	11.8	362	8.7	43	1.0	9.8	30	0.8	932	22.4
Middle Atlantic [1]	1,467	10.9	1,778	13.1	320	2.4	15.5	82	.6	3,645	27.0
East North Central	1,178	9.3	1,951	15.4	225	1.8	17.3	129	1.0	3,483	27.6
West North Central	247	3.8	584	9.2	97	1.5	10.7	49	.9	977	15.1
South Atlantic [2]	441	6.6	626	9.2	297	4.4	13.9	110	1.7	1,474	22.1
East South Central	214	4.9	553	13.0	164	3.9	16.6	60	1.5	991	23.0
West South Central	209	3.8	629	11.8	172	3.3	14.8	61	1.2	1,071	19.8
Mountain	67	4.0	194	11.5	55	3.3	14.6	17	1.1	333	19.6
Pacific	528	11.4	604	13.1	96	2.1	15.1	38	.7	1,266	27.4
United States [3]	4,879	8.1	7,390	12.4	1,480	2.6	14.9	577	1.1	14,326	23.9

[1] Does not include county and city hospitals recorded in New York State.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE I.—*First admissions for diseases of the senium, in all hospitals for mental disease, by region, 1935*

Region	With cerebral arteriosclerosis			Senile			Total	
	Patients	Rate per 100,000 persons aged 45 and over	Rank	Patients	Rate per 100,000 persons aged 55 and over	Rank	Patients	Rate per 100,000 persons aged 45 and over
New England	1,165	51.5	8	604	47.0	3	1,769	78.2
Middle Atlantic [1]	3,369	53.0	9	2,077	61.8	8	5,446	85.5
East North Central	2,133	34.2	6	1,107	32.3	1	3,240	52.3
West North Central	828	24.1	4	934	48.2	5	1,762	51.8
South Atlantic [2]	459	15.6	2	725	45.5	2	1,184	40.6
East South Central	289	13.8	1	632	58.8	7	921	44.9
West South Central	494	21.1	3	574	47.9	4	1,068	45.4
Mountain	201	24.9	5	274	64.6	9	475	58.5
Pacific	837	35.4	7	744	58.5	6	1,581	66.8
United States [3]	9,841	33.5	------	7,747	49.2	------	17,588	60.0

[1] Does not include county and city hospitals recorded in New York State.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE J.—*First admissions for diseases of psychogenic origin*[1] *in all hospitals for mental disease, by region, 1935*

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional psychoses	Psychoneuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
New England	1,552	858	2,410	172	279	326	70	3,257
Middle Atlantic[2]	5,296	2,557	7,853	311	952	864	397	10,377
East North Central	3,562	2,197	5,759	434	582	922	183	7,880
West North Central	1,773	1,229	3,002	134	259	305	88	3,788
South Atlantic[3]	1,642	1,991	3,633	131	198	361	96	4,419
East South Central	1,260	1,026	2,286	152	73	201	30	2,742
West South Central	1,659	949	2,608	104	125	138	75	3,050
Mountain	327	301	628	39	17	35	24	743
Pacific	1,725	998	2,723	158	229	162	117	3,389
United States[4]	19,105	12,174	31,279	1,659	2,748	3,321	1,086	40,093

[1] Without clearly defined tangible cause or structural change.
[2] Does not include city and county hospitals recorded in New York State.
[3] Excluding the District of Columbia.
[4] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE K.—*First admission rates for disorders of psychogenic origin*[1] *in all hospitals for mental disease, by region, 1935*

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional psychoses	Psychoneuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
	Rate per 100,000 persons aged—							
	10–54	25–64	10–64	30–64	35–69	20–64	10–59	10–69
New England	27.4	20.5	37.7	4.8	8.9	6.6	1.1	49.0
Middle Atlantic[2]	28.1	18.9	37.5	2.7	9.8	5.5	2.0	48.2
East North Central	20.3	17.5	29.7	4.1	6.4	6.2	1.0	42.5
West North Central	19.3	19.2	29.4	2.5	5.5	4.0	.8	35.8
South Atlantic[3]	15.1	29.7	30.8	2.4	4.5	4.6	.9	36.5
East South Central	18.1	24.0	30.2	4.2	2.4	3.8	.4	39.4
West South Central	19.3	17.6	27.9	2.3	3.5	2.1	.8	32.0
Mountain	12.9	17.7	22.8	2.7	1.5	1.7	.8	26.1
Pacific	28.8	21.6	40.5	4.0	6.8	3.1	1.9	48.7
United States[4]	22.0	20.3	32.7	3.3	6.5	4.7	1.3	40.6

[1] Without clearly defined tangible cause or structural change.
[2] Does not include city and county hospitals recorded in New York State.
[3] Excluding the District of Columbia.
[4] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE L.—*First admissions for other diseases with psychosis in all hospitals for mental disease, by region, 1935*

Region	With epidemic encephalitis	With other infectious diseases	Traumatic	With other disturbances of circulation	Due to other metabolic, etc., diseases	Due to new growth	With organic changes of the nervous system	With mental deficiency	With convulsive disorders	Undiagnosed and unknown	Total
New England	12	36	37	62	104	18	82	203	156	136	846
Middle Atlantic [1]	120	113	208	204	306	52	228	613	428	514	2,786
East North Central	75	146	103	104	294	27	189	508	220	1,392	3,058
West North Central	33	35	38	50	79	9	87	279	194	303	1,107
South Atlantic [2]	20	52	46	93	203	12	99	485	303	385	1,698
East South Central	15	36	24	25	147	6	78	278	187	380	1,176
West South Central	17	19	25	19	252	16	77	378	253	416	1,472
Mountain	4	12	11	14	25	1	12	43	60	165	347
Pacific	16	49	49	52	96	16	65	178	161	271	953
United States [3]	318	503	542	626	1,509	158	928	2,974	1,976	3,992	13,526

[1] Does not include city and county hospitals recorded in New York State.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE M.—*First admission rates for other diseases with psychosis in all hospitals for mental disease, by region, 1935*

Region	With epidemic encephalitis	With other infectious diseases	Traumatic	With other disturbances of circulation	Due to other metabolic, etc., diseases	Due to new growth	With organic changes of the nervous system	With mental deficiency	With convulsive disorders	Undiagnosed and unknown	Total
	Rate per 100,000 aged—										
	10–74	20–69	20–69	20–69	20–69	20–64	10–74	5–59	5–59	15–74	5–74
New England	0.1	0.7	0.7	1.2	2.0	0.3	1.3	3.0	2.2	2.3	11.3
Middle Atlantic [1]	.5	.7	1.3	1.2	1.8	.3	1.0	2.7	1.9	2.7	11.5
East North Central	.4	1.0	.7	.7	1.8	.2	.9	2.4	1.1	7.6	13.4
West North Central	.3	.5	.5	.7	1.0	.2	.8	2.5	1.7	3.2	9.2
South Atlantic [2]	.1	.6	.6	1.2	2.4	.2	.8	3.6	2.3	3.7	12.0
East South Central	.1	.6	.4	.4	2.7	.2	.9	3.2	2.2	5.6	13.0
West South Central	.1	.2	.4	.2	3.7	.2	.8	3.6	2.4	5.0	13.3
Mountain	.1	.5	.5	.7	1.3	0	.4	1.3	2.0	6.6	10.6
Pacific	.2	.9	.9	.9	1.7	.3	1.0	2.6	2.3	4.2	12.3
United States [3]	.3	.7	.7	.9	2.1	.2	.9	2.8	1.8	4.5	12.0

[1] Does not include city and county hospitals recorded in New York State.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE N.—*Number of discharges and discharge rate per 1,000 under treatment of patients with diseases associated with exogenous causes in State hospitals for mental disease, by region, 1933*

Region	Alcoholic psychosis		Syphilitic psychoses						Due to drugs, etc.		Grand total	
			With cerebral syphilis		General paralysis		Total					
	Patients	Rate per 1,000 under treatment	Patients	Rate per 1,000 under treatment	Patients	Rate per 1,000 under treatment	Patients	Rate per 1,000 under treatment	Patients	Rate per 1,000 under treatment	Patients	Rate per 1,000 under treatment
New England	396	160.6	17	80.2	95	73.4	112	74.3	35	522.4	543	134.4
Middle Atlantic	759	206.0	50	76.6	417	83.7	467	82.8	50	224.2	1,276	133.7
East North Central	657	254.4	74	95.6	628	100.7	702	100.1	58	391.9	1,417	145.4
West North Central	209	253.9	17	61.4	130	81.0	147	78.1	41	525.6	397	142.7
South Atlantic [1]	216	416.2	161	109.7	61	50.2	222	82.7	43	434.3	481	145.7
East South Central	123	510.4	60	140.8	177	192.8	237	176.3	52	650.0	412	247.4
West South Central	84	359.0	75	149.7	95	73.3	170	94.6	48	461.5	302	141.5
Mountain	47	281.4	24	167.8	41	81.0	65	100.2	11	458.3	123	146.4
Pacific	248	281.2	56	166.2	194	105.5	250	114.9	19	422.2	517	166.6
United States [2]	2,763	236.5	545	112.5	1,897	93.0	2,442	96.7	358	411.5	5,563	147.2

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE O.—*Number of discharges and discharge rate per 1,000 under treatment of patients with diseases of the senium in State hospitals for mental disease, by region, 1933*

Region	With cerebral arteriosclerosis		Senile psychosis		Total	
	Patients	Rate per 1,000 under treatment	Patients	Rate per 1,000 under treatment	Patients	Rate per 1,000 under treatment
New England	260	100.5	84	50.5	344	81.0
Middle Atlantic	507	81.1	137	35.1	644	63.4
East North Central	422	87.3	127	39.4	549	68.1
West North Central	96	61.1	100	43.5	196	50.6
South Atlantic [1]	109	87.6	162	63.7	271	71.6
East South Central	89	160.4	129	95.6	218	114.4
West South Central	94	80.7	104	58.9	198	67.5
Mountain	24	53.1	28	37.6	52	43.5
Pacific	165	81.6	76	36.8	241	59.0
United States [2]	1,774	85.0	958	48.4	2,732	67.2

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE P.—*Number of discharges of patients with diseases of psychogenic origin [1] in State hospitals for mental disease, by region, 1933*

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional melancholia	Psychoneuroses and neuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
New England	805	742	1,547	112	100	174	68	2,001
Middle Atlantic	1,939	2,028	3,967	102	232	344	429	5,074
East North Central	2,012	1,445	3,457	173	181	466	111	4,388
West North Central	787	838	1,625	51	97	124	57	1,954
South Atlantic [2]	778	1,085	1,863	37	57	120	114	2,191
East South Central	724	1,104	1,828	30	26	126	47	2,057
West South Central	642	757	1,399	70	47	100	58	1,674
Mountain	182	220	402	18	9	22	12	463
Pacific	890	883	1,773	47	71	59	77	2,027
United States [3]	9,113	9,145	18,258	657	828	1,537	991	22,271

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE Q.—*Discharge rate per 1,000 under treatment of patients with diseases of psychogenic origin [1] in State hospitals for mental disease, by region, 1933*

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional melancholia	Psychoneuroses and neuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
New England	44.5	182.0	69.8	86.0	113.3	379.9	187.8	82.8
Middle Atlantic	39.9	192.9	67.1	42.6	114.6	373.9	267.0	76.8
East North Central	60.2	178.3	83.2	53.3	111.4	343.7	146.8	90.4
West North Central	51.4	136.4	75.8	55.4	101.9	315.5	149.6	81.1
South Atlantic [2]	57.9	140.6	88.1	56.9	120.3	348.8	256.8	95.0
East South Central	144.6	324.1	217.3	78.5	247.6	567.6	451.9	222.9
West South Central	81.9	140.2	105.7	81.5	139.1	40.5	290.0	112.7
Mountain	48.9	164.3	79.4	36.0	84.1	278.5	210.5	79.7
Pacific	59.9	214.8	93.5	45.8	128.6	364.2	221.9	96.3
United States [3]	55.6	179.3	85.0	57.4	115.8	368.7	230.9	92.1

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE R.—*Number of discharges of patients with other diseases with psychosis in State hospitals for mental disease, by region, 1933*

Region	With Huntington's chorea	With brain tumor	With other brain or nervous diseases	With pellagra	With other somatic diseases	Traumatic	Epileptic psychoses	With mental deficiency	Undiagnosed and unknown	Grand total
New England	1	2	41	------	78	19	67	137	245	590
Middle Atlantic	3	4	131	2	176	79	166	264	128	953
East North Central	9	2	76	------	180	36	110	192	337	942
West North Central	1	------	34	------	48	6	87	131	72	379
South Atlantic [1]	1	2	27	111	84	8	129	198	210	770
East South Central	12	3	63	101	84	14	138	178	83	676
West South Central	2	------	44	132	101	16	87	102	188	672
Mountain	------	------	3	2	19	7	27	18	7	83
Pacific	------	1	38	------	78	30	93	77	39	356
United States [2]	30	14	465	348	854	215	909	1,307	1,325	5,467

[1] Excluding the District of Columbia. [2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE S.—*Discharge rate per 1,000 under treatment of patients with other diseases with psychosis in State hospitals for mental disease, by region, 1933*

Region	With Huntington's chorea	With brain tumor	With other brain or nervous diseases	With pellagra	With other somatic diseases	Traumatic	Epileptic psychoses	With mental deficiency	Undiagnosed and unknown	Grand total
New England	19.2	111.1	96.2	-------	177.7	138.7	64.9	51.8	588.9	114.1
Middle Atlantic	27.3	80.0	122.8	400.0	233.4	170.3	80.9	65.3	109.6	98.1
East North Central	53.6	142.9	88.6	-------	198.9	174.8	77.4	52.5	180.3	103.6
West North Central	11.9	-------	78.3	-------	153.8	75.9	77.4	54.9	22.4	49.5
South Atlantic [1]	27.8	200.0	76.3	177.3	138.4	81.6	52.8	68.1	73.2	77.4
East South Central	244.9	375.0	164.5	204.9	228.3	209.0	112.2	129.5	14.5	69.7
West South Central	31.3	-------	131.7	222.2	253.1	134.5	85.5	62.0	49.8	84.4
Mountain	-------	-------	40.0	400.0	202.1	162.8	68.9	37.5	7.6	40.6
Pacific	-------	66.7	140.7	-------	197.5	247.9	84.5	64.5	166.7	105.6
United States [2]	47.2	93.3	108.4	199.8	198.8	160.6	76.0	63.9	65.3	83.9

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE T.—*Ratio of death rates of patients with diseases associated with exogenous causes corresponding to age-specific death rates in the general population, by region, 1933*

Region	Alcoholic psychosis	Syphilitic psychoses			Due to drugs	Grand total
		With cerebral syphilis	General paralysis	Total		
New England	2.64	8.17	12.68	10.31	1.74	5.73
Middle Atlantic	2.82	7.21	9.66	8.22	2.38	6.20
East North Central	2.96	7.35	10.85	9.05	2.41	7.47
West North Central	2.66	10.44	13.53	11.09	7.23	8.63
South Atlantic [1]	4.22	6.48	15.01	9.69	1.04	8.67
East South Central	3.21	7.45	17.96	13.22	1.46	11.28
West South Central	2.47	7.28	16.19	12.43	----------	10.77
Mountain	3.85	8.34	11.47	9.59	----------	8.28
Pacific	2.78	5.49	14.25	11.08	2.66	8.72
United States [2]	2.93	7.24	11.94	9.73	2.14	7.59

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933. Mortality Statistics, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE U.—*Ratio of death rates of patients with diseases of the senium corresponding to age-specific death rates in the general population, by region, 1933*

	With cerebral arteriosclerosis	Senile psychosis	Total		With cerebral arteriosclerosis	Senile psychosis	Total
New England	6.58	4.96	6.05	East South Central	6.38	6.98	5.90
Middle Atlantic	4.93	5.59	5.00	West South Central	4.82	6.27	4.95
East North Central	5.46	4.76	5.05	Mountain	5.83	6.50	5.38
West North Central	7.14	4.65	5.99	Pacific	4.60	4.61	4.74
South Atlantic [1]	5.06	7.06	5.12	United States [2]	5.55	5.46	5.26

[1] Excludes the District of Columbia.
[2] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933. Mortality Statistics, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE V.—*Ratio of death rates of patients with diseases of psychogenic origin* [1] *corresponding to age-specific death rates in the general population, by region, 1933*

	Functional psychoses			Paranoia or paranoid conditions	Involutional melancholia	Psychoneuroses and neuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
New England	2.46	3.43	2.32	1.86	2.44	1.95	4.97	2.22
Middle Atlantic	2.35	3.82	2.34	1.98	2.50	1.85	1.62	2.30
East North Central	2.43	3.58	2.36	1.89	2.52	2.59	1.91	2.25
West North Central	3.00	4.41	3.04	1.61	3.18	2.95	2.78	2.78
South Atlantic [2]	2.31	3.37	2.56	2.76	2.28	3.93	1.74	2.58
East South Central	4.40	5.63	4.60	1.85	6.21	1.15	.92	4.32
West South Central	2.85	3.49	2.94	1.28	3.20	.41	1.58	2.84
Mountain	1.97	4.67	2.50	1.89	1.91	----------	1.64	2.32
Pacific	2.56	3.89	2.55	2.11	2.93	2.23	2.02	2.36
United States [3]	2.50	3.88	2.58	1.92	2.72	2.23	2.08	2.46

[1] Or without clearly defined tangible cause or structural change.
[2] Excludes the District of Columbia.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933. Mortality Statistics, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE W.—*Ratio of death rates of patients with other diseases with psychosis corresponding to age-specific death rates in the general population, by region, 1933*

	With Huntington's chorea	With brain tumor	With other brain or nervous diseases	With pellagra	With other somatic diseases	Traumatic	Epileptic psychoses	With mental deficiency	Undiagnosed	Grand total
New England	28.69	51.79	13.72	-------	20.54	4.29	5.81	3.22	39.45	8.46
Middle Atlantic	16.61	30.53	12.10	-------	22.56	5.03	6.18	2.86	10.48	7.58
East North Central	16.43	12.11	13.40	-------	19.54	2.98	7.91	3.75	16.82	8.87
West North Central	15.66	54.55	9.39	21.05	22.60	6.27	7.74	3.11	3.50	5.01
South Atlantic [1]	21.78	40.82	6.37	11.41	14.50	1.58	6.65	3.76	9.11	7.79
East South Central	6.73	98.43	9.76	9.54	11.85	5.15	7.59	4.13	2.48	4.54
West South Central	5.58	29.17	17.11	11.06	14.62	24.00	7.97	3.78	6.51	7.28
Mountain	34.72	39.37	9.72	16.81	17.88	9.53	10.73	3.50	1.13	5.74
Pacific	15.90	33.61	10.47	60.05	14.83	3.53	6.36	3.52	17.51	7.48
United States [2]	16.08	33.07	11.66	11.43	18.11	4.25	7.12	3.44	7.07	6.99

[1] Excludes the District of Columbia.
[2] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933. Mortality Statistics, Bureau of the Census, U. S. Department of Commerce, 1935.

TABLE X.—*Number of deaths and discharges and rate per 1,000 under treatment of patients with diseases associated with exogenous causes in State hospitals for mental disease, by region, 1933*

Region	Alcoholic psychoses		Syphilitic psychoses						Due to drugs, etc.		Grand total	
			Cerebral syphilis		General paralysis [1]		Total					
	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment
New England	508	206.0	43	202.8	302	233.2	345	228.9	37	552.3	890	220.3
Middle Atlantic	948	257.3	123	188.4	1,062	213.1	1,185	210.2	60	269.0	2,193	229.8
East North Central	784	303.6	156	201.5	1,460	234.1	1,616	230.4	64	432.4	2,464	252.9
West North Central	241	292.8	54	195.0	360	224.4	414	220.0	49	628.2	704	253.1
South Atlantic [2]	257	495.2	318	216.7	333	273.9	651	242.6	45	454.5	953	288.7
East South Central	136	564.3	107	251.1	393	428.1	500	372.0	54	900.0	690	414.4
West South Central	93	397.5	125	249.5	351	270.8	476	264.9	48	461.5	617	289.0
Mountain	58	347.3	42	293.7	117	231.2	159	245.0	11	458.3	228	271.4
Pacific	289	327.7	83	246.3	519	282.2	602	276.7	21	466.6	912	293.9
United States [3]	3,342	286.1	1,064	219.6	5,015	245.8	6,079	240.7	390	448.3	9,811	259.6

[1] Now designated as "general paresis."
[2] Excluding the District of Columbia.
[3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE Y.—*Number of deaths and discharges and rate per 1,000 under treatment of patients with diseases of the senium in State hospitals for mental disease, by region, 1933*

Region	With cerebral arteriosclerosis		Senile psychosis		Total	
	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment	Number	Rate per 1,000 under treatment
New England	1,034	399.8	548	329.7	1,582	372.4
Middle Atlantic	2,030	324.8	1,225	313.8	3,255	320.6
East North Central	1,620	335.1	912	282.9	2,532	314.2
West North Central	545	346.7	666	289.7	1,211	312.8
South Atlantic [1]	394	316.5	821	322.9	1,215	320.9
East South Central	238	428.9	489	362.3	727	381.6
West South Central	325	279.0	506	286.4	831	283.4
Mountain	141	311.9	216	290.3	357	298.5
Pacific	586	289.8	573	277.4	1,159	283.6
United States [2]	6,958	333.5	6,013	303.7	12,971	319.0

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE Z.—*Number of deaths and discharges of patients with diseases of psychogenic origin [1] in State hospitals for mental disease, by region, 1933*

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional melancholia	Psychoneuroses and neuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
New England	1,303	928	2,231	159	166	184	86	2,826
Middle Atlantic	3,275	2,574	5,849	197	395	364	456	7,261
East North Central	2,888	1,814	4,702	289	305	504	125	5,925
West North Central	1,223	1,147	2,370	76	178	135	66	2,825
South Atlantic [2]	1,190	1,468	2,658	74	90	138	123	3,083
East South Central	982	1,357	2,339	43	44	129	48	2,603
West South Central	883	983	1,866	89	76	101	61	2,193
Mountain	269	305	574	36	15	22	13	660
Pacific	1,312	1,091	2,403	88	119	63	84	2,757
United States [3]	13,746	11,720	25,466	1,072	1,404	1,642	1,081	30,665

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia. [3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE AA.—*Death and discharge rate per 1,000 under treatment of patients with diseases of psychogenic origin [1] in State hospitals for mental disease, by region, 1933*

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional melancholia	Psychoneuroses and neuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
New England	72.0	227.6	100.7	122.1	188.0	401.7	237.5	115.6
Middle Atlantic	67.4	244.8	98.9	82.3	195.1	395.6	283.8	109.9
East North Central	86.4	223.8	113.2	89.1	187.7	371.7	165.3	122.1
West North Central	79.9	186.7	110.5	82.5	187.0	343.5	173.2	117.3
South Atlantic [2]	88.6	190.2	125.7	113.8	189.9	401.1	277.1	133.7
East South Central	196.1	398.4	278.0	112.5	419.0	581.1	461.5	282.1
West South Central	112.7	182.1	141.0	103.6	224.9	44.9	305.0	147.6
Mountain	72.3	227.8	113.4	72.0	140.2	278.5	228.0	113.6
Pacific	88.3	265.4	126.7	85.7	215.6	388.9	242.1	131.0
United States [3]	83.9	229.8	118.5	93.6	196.4	393.9	251.9	126.8

[1] Or without clearly defined tangible cause or structural change.
[2] Excluding the District of Columbia. [3] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department Commerce, 1933.

TABLE BB.—*Number of deaths and discharges of patients with other diseases with psychosis in State hospitals for mental disease, by region, 1933*

Region	With Huntington's chorea	With brain tumor	With other brain or nervous diseases	With pellagra	With other somatic diseases	Traumatic	Epileptic psychoses	With mental deficiency	Undiagnosed	Grand total
New England	14	13	93	-------	179	26	127	222	332	1,006
Middle Atlantic	20	24	251	2	375	107	298	384	199	1,660
East North Central	33	4	176	-------	371	43	219	325	513	1,684
West North Central	11	6	65	1	115	11	161	194	126	690
South Atlantic [1]	9	8	50	206	201	10	319	326	393	1,522
East South Central	15	4	97	156	135	18	235	237	171	1,068
West South Central	5	6	92	203	164	19	164	161	333	1,147
Mountain	8	3	10	3	39	12	72	36	14	197
Pacific	6	7	64	2	143	35	163	119	64	603
United States [2]	122	75	915	573	1,733	281	1,769	2,018	2,171	9,657

[1] Excluding the District of Columbia. [2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE CC.—*Death and discharge rate per 1,000 under treatment of patients with other diseases with psychosis in State hospitals for mental disease, by region, 1933*

Region	With Huntington's chorea	With brain tumor	With other brain or nervous diseases	With pellagra	With other somatic diseases	Traumatic	Epileptic psychoses	With mental deficiency	Undiagnosed	Grand total
New England	269.2	722.2	218.3	-------	407.8	189.8	123.0	84.0	798.0	194.5
Middle Atlantic	181.8	480.0	235.3	400.0	497.3	230.6	145.2	95.0	170.4	170.9
East North Central	196.5	285.8	205.2	-------	409.9	208.8	154.1	88.9	274.5	185.2
West North Central	130.9	545.5	149.7	200.0	368.5	139.2	143.2	81.3	39.2	90.1
South Atlantic [1]	250.0	800.0	141.3	329.1	331.2	102.0	130.6	112.1	137.0	153.0
East South Central	306.1	387.5	253.3	316.5	366.9	268.7	191.1	172.4	29.9	110.1
West South Central	78.2	352.9	275.4	341.7	411.0	159.7	161.2	97.9	88.2	144.1
Mountain	333.3	500.0	133.3	600.0	414.9	279.1	183.7	75.0	15.2	96.3
Pacific	146.3	466.7	237.0	666.6	362.1	289.2	148.1	99.7	273.5	178.9
United States [2]	191.9	500.0	213.3	329.0	403.4	209.9	147.9	98.6	107.0	148.2

[1] Excluding the District of Columbia.
[2] Including the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE DD.—*Ratio of first admissions to hospitalized patients with diseases associated with exogenous causes in State hospitals for mental disease, by region, 1933*

[Expressed as percent]

Region	Alcoholic psychoses	Syphilitic psychoses			Due to drugs, etc.	Grand total
		Cerebral	General paralysis [1]	Total		
New England	21.5	20.1	27.9	26.8	96.7	24.1
Middle Atlantic	40.8	30.9	34.7	34.2	30.7	36.6
East North Central	38.4	23.1	35.5	34.1	78.6	35.7
West North Central	36.9	30.9	38.7	37.6	144.8	38.9
South Atlantic [2]	134.4	28.4	46.9	36.4	74.1	48.2
East South Central	112.4	29.8	67.4	53.2	119.2	61.3
West South Central	71.6	41.0	50.1	47.5	80.4	50.9
Mountain	41.3	35.6	28.8	30.2	46.2	32.5
Pacific	58.5	26.4	44.0	41.2	116.7	46.7
United States [2]	41.1	29.2	38.1	36.3	70.4	38.4

[1] Now designated as "general paresis."
[2] Excludes the District of Columbia.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE EE.—*Ratio of first admissions to hospitalized patients with diseases of the senium in State hospitals for mental disease, by region, 1933*

[Expressed as percent]

Region	With cerebral arteriosclerosis	Senile	Total	Region	With cerebral arteriosclerosis	Senile	Total
New England	66.0	39.3	54.8	East South Central	79.2	51.5	58.9
Middle Atlantic	58.1	52.0	55.8	West South Central	51.2	42.8	46.2
East North Central	54.4	41.4	49.0	Mountain	48.9	32.8	38.7
West North Central	55.4	44.5	48.7	Pacific	49.9	44.9	47.3
South Atlantic [1]	49.1	47.7	48.2	United States [2]	56.2	45.4	50.8

[1] Excludes the District of Columbia.
[2] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE FF.—*Ratio of first admissions to hospitalized patients with diseases of psychogenic origin*[1] *in State hospitals for mental disease, by region, 1933*

[Expressed as percent]

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional melancholia	Psychoneuroses and neuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
New England	4.9	14.4	6.4	10.1	15.5	43.1	16.3	7.5
Middle Atlantic	8.5	25.5	11.1	9.7	25.0	65.1	36.8	12.4
East North Central	8.5	19.3	10.3	9.6	23.3	62.8	20.6	11.9
West North Central	10.4	19.1	12.7	9.2	20.4	58.5	28.6	13.6
South Atlantic[2]	9.3	22.4	13.7	12.2	27.1	71.8	23.1	14.7
East South Central	21.6	46.3	29.9	8.0	37.7	89.2	33.9	29.7
West South Central	16.4	17.7	16.9	10.4	26.7	81.7	36.7	17.6
Mountain	7.7	26.0	11.9	8.0	8.7	57.9	36.4	12.2
Pacific	10.1	28.7	13.5	12.8	33.5	56.6	29.3	14.4
United States[3]	9.3	22.7	12.1	10.1	23.7	63.0	29.0	13.1

[1] Or without clearly defined tangible cause or structural change.
[2] Excludes the District of Columbia.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE GG.—*Ratio of first admissions to hospitalized patients with other diseases with psychosis in State hospitals for mental disease, by region, 1933*

[Expressed as percent]

Region	With Huntington's chorea	With brain tumor	With other brain or nervous diseases	With pellagra	With other somatic diseases	Traumatic	Epileptic psychoses	With mental deficiency	Undiagnosed	Grand total
New England	23.7	140.0	21.6	33.3	64.2	23.4	10.4	5.5	440.5	21.1
Middle Atlantic	24.4	92.3	33.0	33.3	96.3	42.0	15.7	12.0	36.8	23.6
East North Central	19.3	70.0	30.4	150.0	73.2	38.0	16.1	12.9	55.2	27.9
West North Central	24.7	60.0	24.4	100.0	58.4	20.6	18.8	11.2	5.3	12.0
South Atlantic[1]	40.7	300.0	21.7	39.3	57.1	27.3	17.8	15.0	17.3	20.1
East South Central	26.5	75.0	26.6	35.9	44.6	40.8	20.1	15.9	7.1	12.8
West South Central	16.9	27.3	42.1	35.8	71.9	19.0	19.6	20.0	12.8	19.8
Mountain	12.5	66.7	23.1	150.0	65.5	6.5	19.4	13.5	3.3	11.5
Pacific	25.7	100.0	26.7	200.0	69.8	31.4	20.6	13.0	101.2	28.2
United States[2]	22.6	84.0	28.7	37.8	68.8	32.7	17.3	12.6	17.4	19.7

[1] Excludes the District of Columbia.
[2] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE HH.—*Ratio of total admissions to discharges and deaths of patients with diseases associated with exogenous causes in State hospitals for mental disease, by region, 1933*

[Expressed as percent]

Region	Alcoholic psychoses	Syphilitic psychoses			Due to drugs, etc.	Grand total
		With cerebral syphilis	General paralysis [1]	Total		
New England	108.5	102.3	116.2	114.5	110.8	110.9
Middle Atlantic	136.1	147.2	140.8	141.4	110.0	138.3
East North Central	104.8	102.6	127.3	124.9	126.6	118.6
West North Central	100.0	135.2	147.8	146.1	89.8	126.4
South Atlantic [2]	152.5	113.8	132.4	123.3	135.6	131.8
East South Central	99.3	105.6	96.2	98.2	66.7	95.9
West South Central	136.6	139.2	143.9	142.6	118.8	139.9
Mountain	89.7	107.1	115.4	113.2	72.7	105.3
Pacific	136.3	94.0	120.6	116.9	152.4	123.9
United States [3]	120.7	117.4	128.3	126.4	109.5	123.8

[1] Now designated as "general paresis."
[2] Excludes the District of Columbia.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE II.—*Ratio of total admissions to discharges and deaths of patients with diseases of the senium in State hospitals for mental disease, by region, 1933*

[Expressed as percent]

Region	With cerebral arterio-sclerosis	Senile psycho-sis	Total	Region	With cerebral arterio-sclerosis	Senile psycho-sis	Total
New England	108.6	87.2	101.2	East South Central	112.6	98.2	102.9
Middle Atlantic	130.5	119.5	126.4	West South Central	139.1	112.3	122.7
East North Central	117.5	110.9	115.1	Mountain	117.7	85.2	98.0
West North Central	111.2	115.0	113.3	Pacific	132.8	125.1	129.0
South Atlantic [1]	115.2	105.0	108.3	United States [2]	121.5	110.1	116.2

[1] Excludes the District of Columbia.
[2] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE JJ.—*Ratio of total admissions to discharges and deaths of patients with diseases of psychogenic origin* [1] *in State hospitals for mental disease, by region, 1933*

[Expressed as percent]

Region	Functional psychoses			Paranoia or paranoid conditions	Involutional melancholia	Psychoneuroses and neuroses	With psychopathic personality	Grand total
	Dementia praecox	Manic-depressive psychosis	Total					
New England	115.1	111.7	113.7	122.0	101.2	97.8	89.5	111.7
Middle Atlantic	160.5	121.9	143.5	136.0	126.8	122.0	124.3	140.1
East North Central	127.2	112.3	121.5	116.3	115.7	126.0	138.4	121.7
West North Central	147.6	114.7	131.7	118.4	112.9	124.4	165.2	130.6
South Atlantic [2]	125.6	137.3	132.1	117.6	133.3	126.8	75.6	129.3
East South Central	115.9	98.5	105.8	120.9	54.5	81.4	54.2	103.0
West South Central	166.0	116.2	139.8	120.2	110.5	116.8	113.1	136.2
Mountain	134.2	115.4	124.2	130.6	86.7	172.7	130.8	125.5
Pacific	136.9	117.0	127.8	152.3	131.1	109.5	125.0	128.3
United States [3]	137.3	116.8	127.9	125.2	117.5	117.8	114.7	126.3

[1] Or without clearly defined tangible cause or structural change.
[2] Excludes the District of Columbia.
[3] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

TABLE KK.—*Ratio of total admissions to discharges and deaths of patients with other diseases with psychosis in State hospitals for mental disease, by region, 1933*

[Expressed as percent]

Region	With Huntington's chorea	With brain tumor	With other brain or nervous diseases	With pellagra	With other somatic diseases	Traumatic	Epileptic psychoses	With mental deficiency	Undiagnosed and unknown	Grand total
New England	85.7	61.5	110.8	.....	106.7	111.6	119.7	105.4	174.4	130.3
Middle Atlantic	135.0	100.0	128.7	50.0	105.6	158.9	118.8	152.3	190.5	136.1
East North Central	87.9	175.0	130.7	.....	114.6	158.1	117.8	170.8	178.8	148.0
West North Central	172.7	50.0	160.0	400.0	111.3	136.4	133.5	149.0	143.7	138.8
South Atlantic [1]	133.3	75.0	148.0	88.3	125.4	270.0	137.3	139.0	119.3	125.7
East South Central	86.7	75.0	94.8	94.9	85.2	127.8	109.8	99.6	237.4	121.2
West South Central	200.0	66.7	133.7	85.2	114.0	100.0	130.5	217.4	145.0	136.3
Mountain	37.5	66.7	200.0	100.0	97.4	33.3	115.3	202.8	221.4	130.5
Pacific	183.3	114.3	109.4	100.0	130.8	100.0	149.7	158.8	328.1	158.5
United States [2]	111.5	86.7	126.6	90.6	111.2	139.9	126.6	147.9	170.4	135.9

[1] Excludes the District of Columbia.
[2] Includes the District of Columbia.

Source: Patients in Hospitals for Mental Disease, Bureau of the Census, U. S. Department of Commerce, 1933.

INDEX

Page

Admissions:
- First ... 16, 42
- Official ... 22
- Temporary and observation ... 22
- Total ... 15
- Voluntary ... 22, 28

Ages of first admissions ... 25
Alcoholic psychoses ... 8, 12, 18, 30, 35, 36, 77, 80, 83, 85, 87, 89, 91
Alcoholism without psychosis ... 9
American Psychiatric Association ... 48, 50, 72, 73

Brain tumor, psychosis with ... 8, 18, 30, 35, 36, 37, 79, 82, 84, 85, 86, 88, 89, 90, 92

Capacity ... 46
Cerebral arteriosclerosis ... 8, 13, 18, 30, 36, 77, 80, 83, 85, 87, 89, 91
Coefficients of variation ... 14, 27, 33, 38, 40, 44, 64
Cost-of-living index ... 59

Death rate ... 34, 35, 36, 62, 68, 69, 70, 71
Deaths ... 34, 39, 42
Dementia praecox ... 8, 13, 18, 30, 36, 37, 40, 42, 78, 81, 84, 86, 88, 90, 91
Dentists ... 52, 53, 55, 72, 73
Discharge rates ... 39, 62, 68, 69, 70
Discharges ... 29, 35, 39, 42
Disease-age-specific rates ... 10
Drug addiction without psychosis ... 9
Drugs, psychoses due to ... 8, 18, 30, 35, 36, 77, 80, 83, 85, 87, 89, 91

Epilepsy without psychosis ... 9, 14
Epileptic psychoses ... 8, 13, 18, 30, 36, 37, 40, 79, 82, 84, 85, 86, 88, 89, 90, 92
Exogenous causes, diseases associated with ... 8, 9, 11, 12, 14, 15, 18, 20, 21, 23, 24, 27, 29, 30, 31, 32, 33, 34, 35, 36, 38, 39, 40, 41, 43, 63, 69, 77, 80, 83, 85, 87, 89, 91
Expected hospitalization rate ... 5, 67
Expenditures, variability of ... 57
Expenditures, maintenance ... 1, 55, 64, 65, 73

First admission rates ... 16, 62, 65, 67, 68, 69, 70
First admissions ... 16, 42
Functional psychoses ... 8, 9, 18, 19, 23, 30, 32, 36, 37, 78, 81, 84, 86, 88, 90, 91

General paresis (paralysis) ... 8, 11, 12, 18, 30, 36, 40, 77, 80, 83, 85, 87, 89, 91

Hospitalization of patients ... 2
Hospitalization rates ... 4, 62, 65, 66, 68, 69, 70, 71
Hospitals:
- City and county ... 2, 11, 16, 23, 28, 44, 47, 66, 69, 70, 71, 72
- Private ... 2, 3, 11, 15, 16, 23, 28, 44, 47, 66, 69, 70, 71, 72
- Psychopathic ... 3, 44
- State ... 2, 7, 11, 15, 16, 23, 44, 47, 66, 69, 70, 71, 72
- Veterans' ... 2, 3, 11, 15, 16, 23, 28, 44, 45, 47, 66, 69, 70, 71, 72

Huntington's chorea, psychosis with ... 8, 18, 30, 36, 79, 82, 84, 85, 86, 88, 89, 90, 92

Page
Involutional melancholia ---- 8, 13, 18, 30, 36, 37, 78, 81, 84, 86, 88, 90, 91

Length of stay ---- 41

Manic-depressive psychosis ---- 8, 13, 18, 30, 36, 37, 42, 78, 81, 84, 86, 88, 90, 91
Medical personnel ---- 47, 48, 54, 64, 65, 72
Mental deficiency, psychosis with ---- 8
13, 18, 30, 36, 37, 79, 82, 84, 85, 86, 88, 89, 90, 92
Mental deficiency without psychosis ---- 9, 14
Movement of patient population ---- 27

Nursing personnel ---- 49, 54, 64, 65, 72

Occupational therapists ---- 52, 53, 55, 72, 73
Other brain or nervous diseases with psychosis ---- 8
18, 30, 36, 79, 82, 84, 85, 86, 89, 90, 92
Other diseases with psychosis ---- 8
9, 11, 13, 14, 15, 18, 19, 20, 21, 23, 24, 27, 29, 30, 32, 33, 34, 35, 36, 39, 40, 43, 63, 79, 82, 84, 85, 86, 88, 89, 90, 92
Others without psychosis ---- 9
Other forms of syphilis of the central nervous system (cerebral syphilis) ---- 8
12, 18, 30, 36, 40, 77, 80, 83, 85, 87, 89, 91
Overcrowding ---- 46, 65, 72

Paranoia or paranoid conditions ---- 8, 13, 18, 30, 35, 36, 78, 81, 84, 86, 88, 90, 91
Parole ---- 6, 42, 67
Patients on books ---- 6
Pellagra, psychosis with ---- 8, 14, 18, 30, 79, 82, 84, 85, 86, 88, 89, 90, 92
Persistence rate ---- 65
Probability of hospitalization ---- 2
Psychogenic origin, diseases of ---- 8
9, 11, 13, 14, 15, 18, 19, 20, 21, 23, 24, 27, 29, 30, 31, 32, 33, 34, 35, 36, 39, 40, 43, 63, 67, 68, 78, 81, 84, 86, 88, 90, 91
Psychologists and psychometrists ---- 52, 53, 55, 72, 73
Psychoneuroses or neuroses ---- 8, 18, 30, 36, 42, 78, 81, 84, 86, 88, 90, 91
Psychopathic personality, psychosis with ---- 8
18, 30, 36, 42, 78, 81, 84, 86, 88, 90, 91
Psychopathic personality without psychosis ---- 9
Psychosis, without ---- 7, 8, 14, 17, 19, 21, 71

Readmissions ---- 42
Removal rate ---- 38, 42, 69, 71
Replacement of patient population ---- 42
Retention rate ---- 65

Senile dementia ---- 8, 13, 18, 30, 36, 77, 80, 83, 85, 87, 89, 91
Senium, diseases of the ---- 8, 9, 11, 12, 14, 15, 18, 19, 20, 21, 23, 24, 27, 29, 30, 31, 32, 33, 34, 35, 36, 38, 39, 40, 41, 43, 62, 68, 77, 80, 83, 85, 87, 89, 91
Social workers ---- 52, 53, 55, 72, 73
Somatic diseases, psychosis with ---- 8, 18, 30, 36, 37, 79, 82, 84, 85, 86, 88, 89, 90, 92
Space per patient, per square foot ---- 45
Standard deviation ---- 14, 27, 33, 38, 40, 44, 64
Survival rate ---- 65
Syphilis, psychoses with ---- 8, 12, 18, 30, 36, 40, 77, 80, 83, 85, 87, 89, 91

Traumatic psychosis ---- 8, 18, 30, 36, 79, 82, 84, 85, 86, 88, 89, 90, 92
Trend of mental disease ---- 15, 27
Turnover of patient population ---- 41, 68

Undiagnosed psychoses ---- 8, 13, 18, 30, 36, 79, 82, 85, 86, 88, 89, 90, 92
Urban-rural differences ---- 4, 76

○